

SUPPLEMENT 2

Service Manual

DISCOVISION.



**ORDER NO.
VRT-002-0**

VIDEO DISC PLAYER

PR-7820

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Printed in Japan

1. MOUNT AND ADJUSTMENT OF ALL PARTS ON TO THE PLATFORM

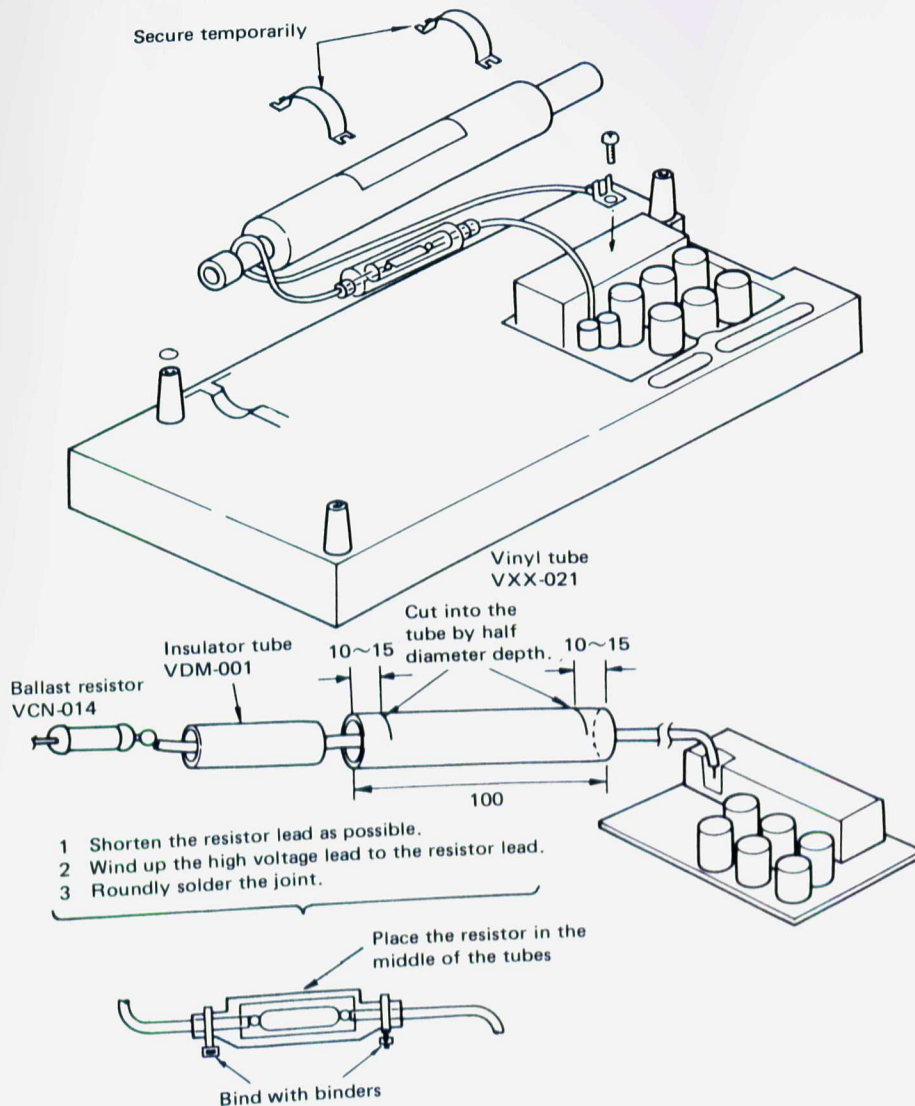
1. Preparation

- 1) Prepare the jigs and tools.
- 2) Remove the fixed mirror base, the optical support ass'y, the tracking ass'y and the focus motor.

2. Mount the laser tube

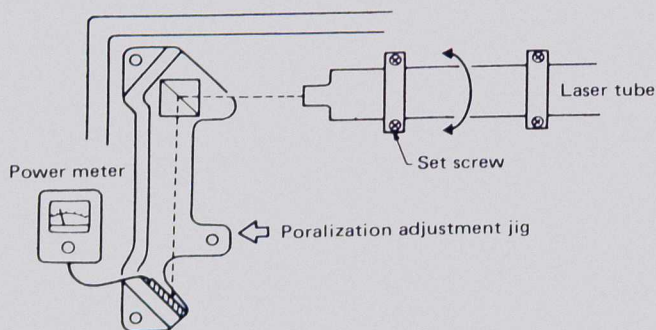
- 1) Place the laser tube on the platform with the high voltage terminal in the upper position.

- 2) Push the laser tube so that the rib side of the platform base is up against the lens surface.
 - 3) Secure temporarily with the tube holder ass'y.
 - 4) Connect the ballast resistor to the high voltage cord, and bind the insulator tube and the UL vinyl tube with binders.
- Secure each cord to the platform as shown in the diagram below.



3. Laser beam poralization adjustment

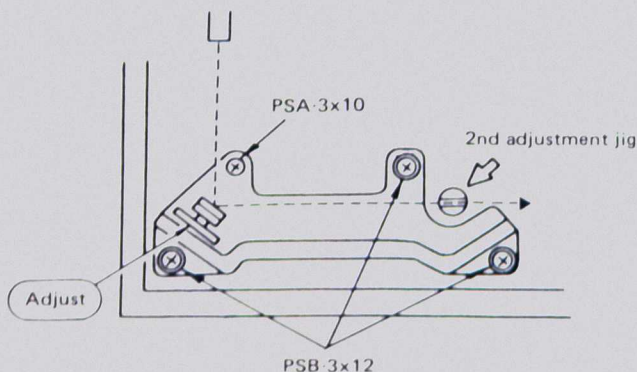
- 1) Mount the platform onto the jig.
- 2) Connect the power input terminal to the LSPS ass'y.
- 3) Turn on the power and light up the laser.
- 4) Set the poralization adjustment jig.
- 5) Rotate the laser tube and secure at the position where minimum reading in the power meter is obtained.



NOTE:
After fixing with the screws, the laser tube should not rotate.

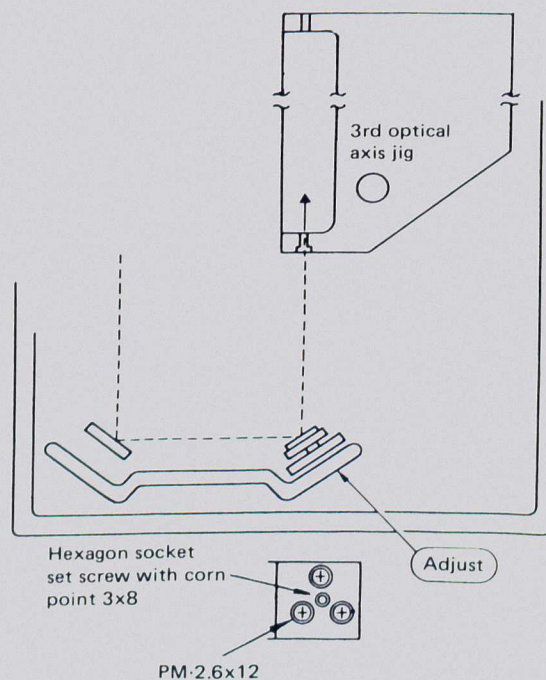
4. 1st mirror adjustment and fixing

- 1) Mount the fixed mirror base onto the platform.
- 2) Remove the 2nd fixed mirror from the base.
- 3) Place the 2nd adjustment jig and adjust the 1st mirror so that the beam passes through the pin holes.
- 4) Remove the jig.



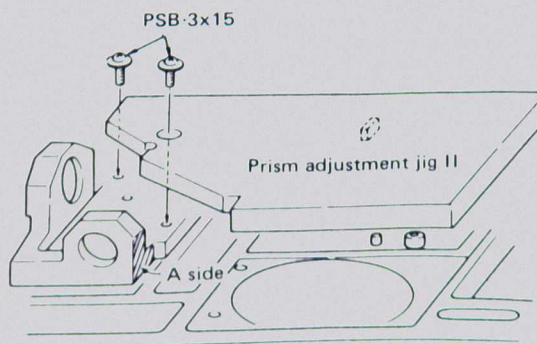
5. Mount the 2nd mirror

- 1) Mount the small fixed mirror in the 2nd mirror position.
- 2) Insert the 3rd optical axis jig into the focus motor hole, rotate clockwise, and push forward.
- 3) Adjust the 2nd mirror so that the beam passes through the 2 pin holes.
- 4) Remove the 3rd optical axis jig.



6. Mount the optical support

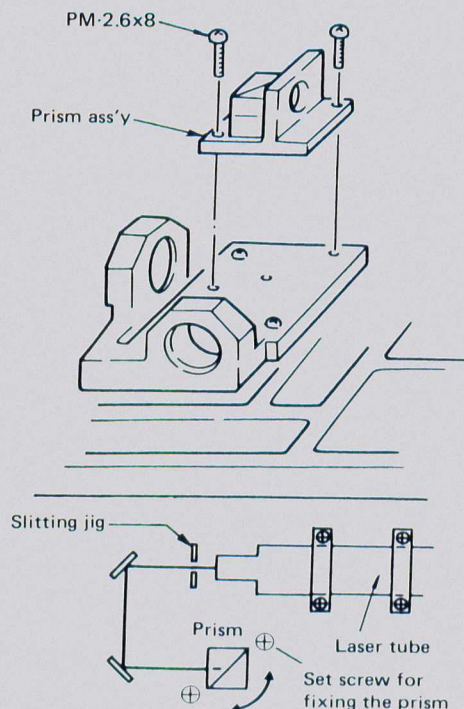
- 1) Fix the optical support ass'y temporarily.
- 2) Set the prism adjustment jig II.
- 3) Turn the optical support around so that the A side is up against the prism adjustment jig II and fix.



- 4) After mounting, remove the prism adjustment jig II.

7. Prism ass'y adjustment

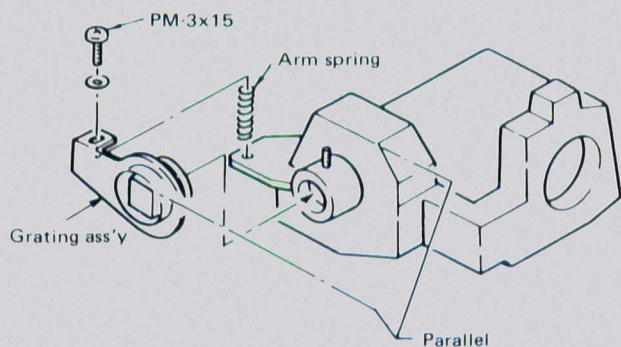
- 1) Fix the prism ass'y temporarily.
- 2) Place the slitting jig between the laser tube and the 1st mirror.
- 3) Observe the light reflected from the surface of the prism, and rotate the prism so that the beam passes through the slit.



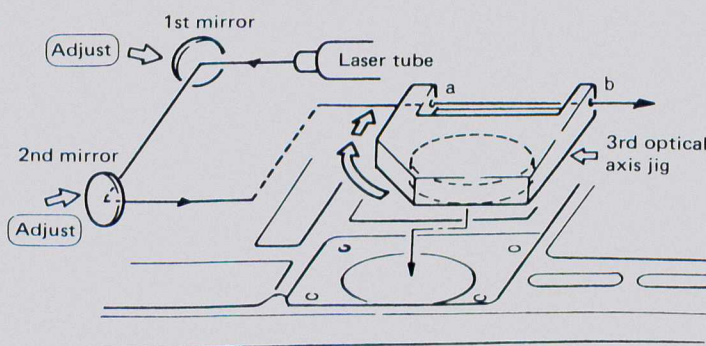
- 4) Fix the prism ass'y and remove the slitting jig.

8. Mount the grating ass'y and fine adjustment of 1st and 2nd mirrors

- 1) Mount the grating ass'y parallel to the optical support.



- 2) Use the 3rd optical axis jig to adjust the 1st and 2nd mirrors so that the beam passes through the 2 pin holes, a and b.



When you mount the 3rd optical axis jig, insert the jig into the hole for the tracking ass'y, turn clockwise, and push to the arrow.

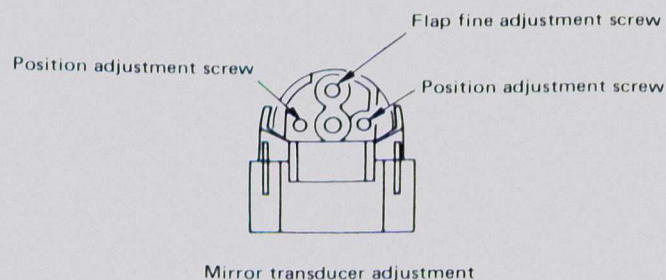
NOTE:

Mount closely to the platform base.

- 3) Remove the 3rd optical axis jig.

9. Preparation of tracking ass'y

- 1) Place the transducer base in the tracking ass'y adjustment jig, rotate clockwise, and then push in the direction of the arrow and tighten the screws.
- 2) Mount the large fixed mirror, and adjust angle and position by the rear screw to ensure that the reflected beam passes through the (A) and (B) pin holes.
- 3) Mount the mirror transducer ass'y into the transducer base, and adjust both front/rear and left/right, plus the flap fine adjustment to ensure passage through pin holes (C) and (D). The flap fine adjustment screw is to be screwlocked with Screw-Tight 300-UB.



- 4) Pass an AC current (15Hz, 300mA) through the mirror transducer ass'y in order to drive the mirror. Adjust the left and right position adjustment screws to restrict the degree of deflection to within the deflection limit lines.
- 5) Rotate the tracking ass'y from the jig, and subject it to the aging process (200mA p-p pink noise applied for at least 24 hours.)
- 6) Then remount the tracking ass'y back into the adjustment jig, and adjust the optical axis as described below.

Displacement in X direction:

correct with 3rd mirror.

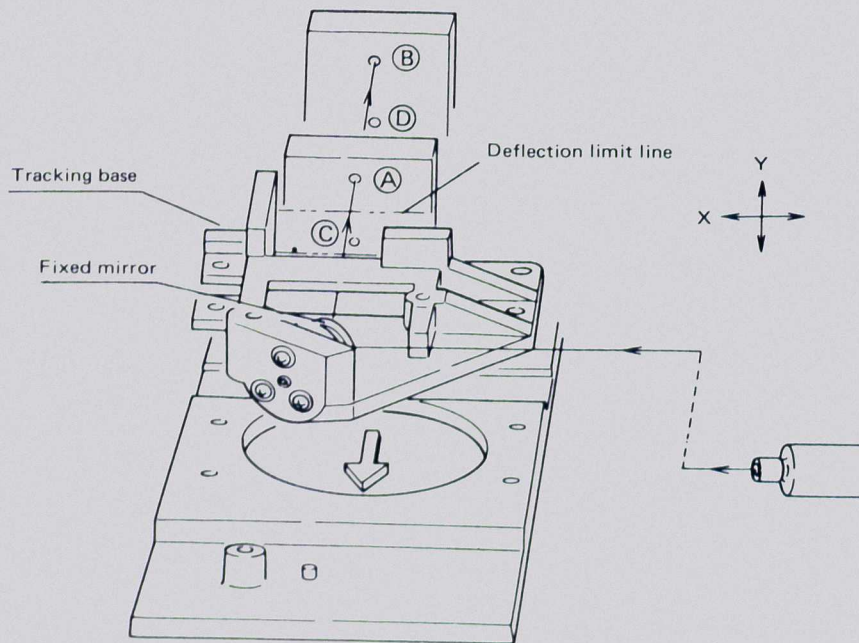
Displacement in Y direction:

correct with mirror transducer.

NOTE:

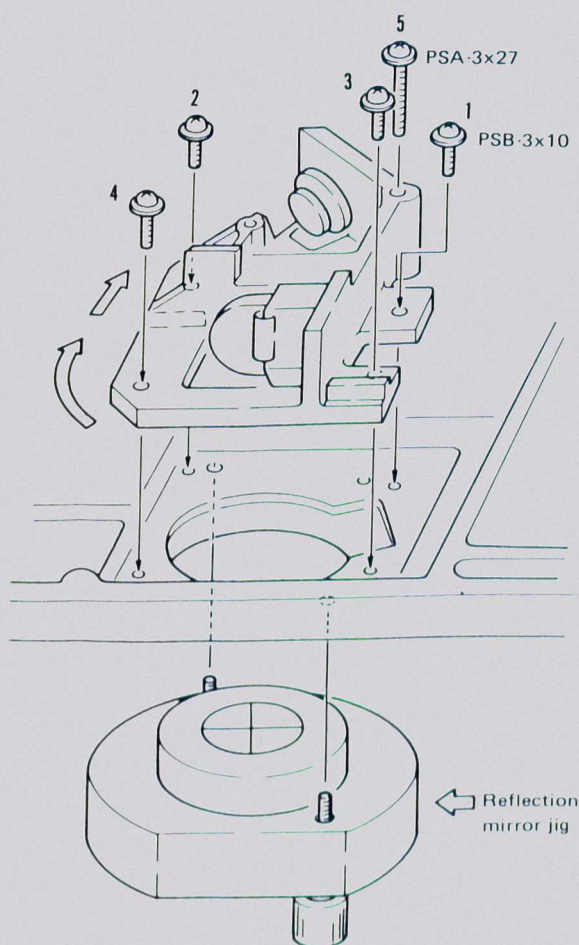
Do not try to make corrections with the mirror transducer flap.

- 7) Fine adjust the deflection limits [initially adjusted in step (4) above], and then screwlock all adjustment screws with Screw-Tight 300-UB.
- 8) Remove from the tracking ass'y adjustment jig.

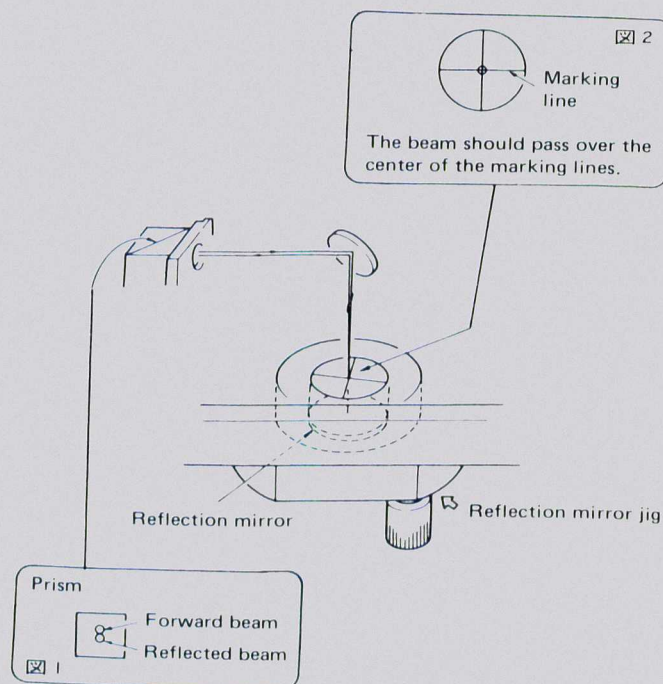


10. Mount the tracking ass'y and optical axis check

- 1) Insert the reflection mirror jig into the focus motor position.
- 2) Place the power protection cover over the power supply.
- 3) Turn on the power and light up the laser.
- 4) Insert the tracking ass'y into the focus motor hole, rotate clockwise, push forward and tighten the screws in the order of the numbers.



Optical axis check specification



- 5) Check the position and level accuracy of the beam at the focus motor position.

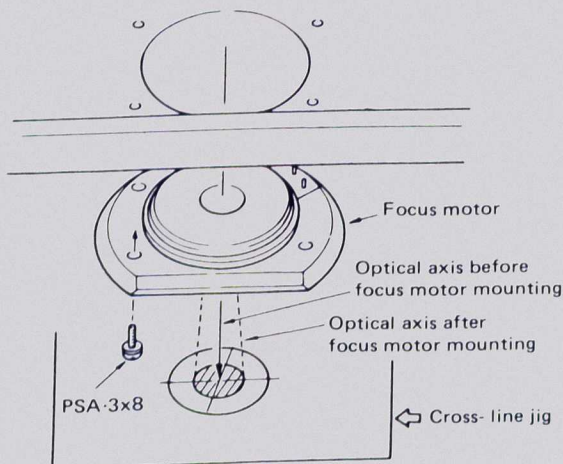
1. The beam reflected by the reflection mirror jig should overlap or contact with the forward beam at the prism stage (level accuracy).
2. The beam should pass over the marking line on the surface of the reflection mirror jig (position accuracy).

If the above conditions are not satisfied, the adjustments described under step 9 above should be repeated.

Remove the reflection mirror jig after the adjustments.

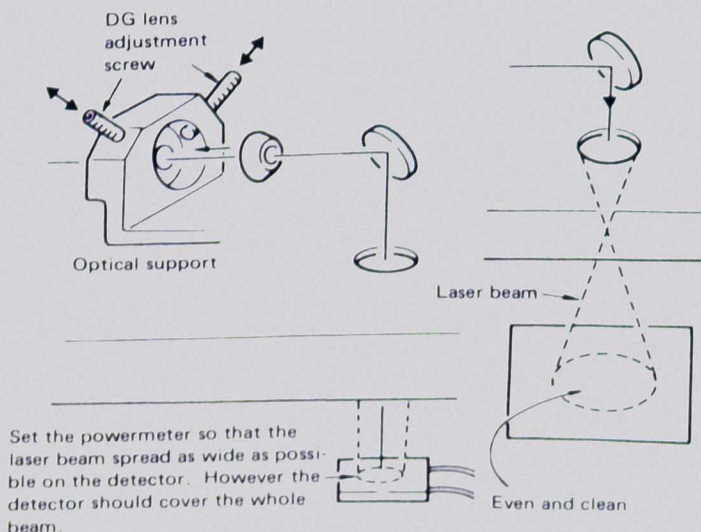
11. Focus motor mounting and optical axis check

- 1) Place the cross-line jig exactly under the optical axis prior to the focus motor mounting, and check that the beam spot after mounting the focus motor is even and clean and is in the center of the cross-line.



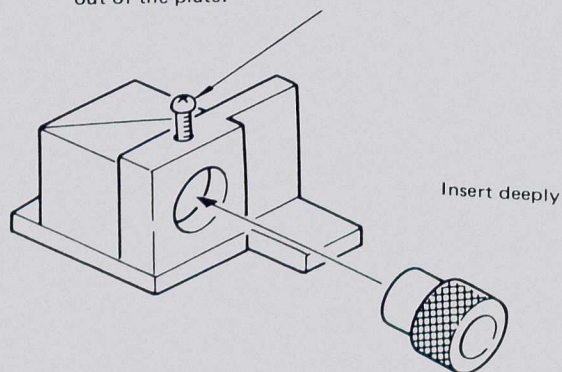
12. Adjustment and fixing of DG lens

- 1) Pass the optical axis after mounting the focus motor through the DG lens and check that the DG lens has no dirt and scratch.
- 2) Place the DG lens in its prescribed position.
- 3) Set the power meter below the objective lens and adjust the DG lens adjustment screw to obtain maximum reading in the powermeter.

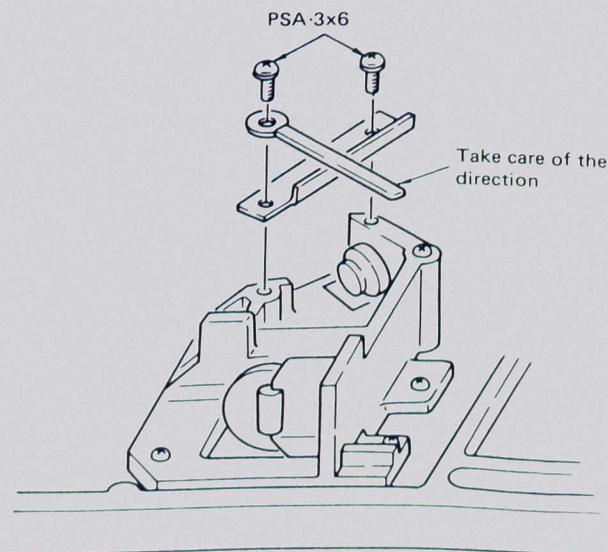


13. 1/4-wave plate mounting

Secure 1/4-wave plate ass'y temporarily not to come out of the plate.



14. Vibration-proof plate mounting



15. Static adjustment

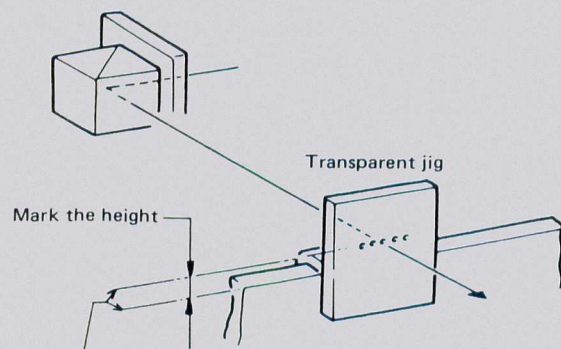
Preparation:

- 1) Mount the platform onto the static jig.
- 2) Connect the power input terminals to the LSPS ass'y.
- 3) Turn on the power and light up the laser.
- 4) Set the mobile reflection mirror under the objective lens.

15-1. Transparent jig check

- 1) Attach the transparent jig to the wall of the platform, adjust the height of the mobile reflection mirror, and focus the beam onto the transparent jig.

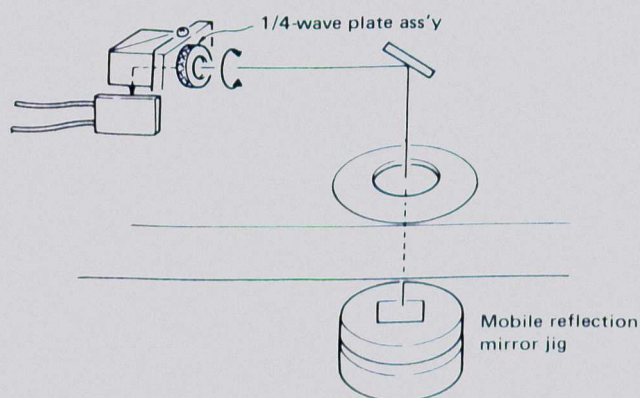
Then mark the height with several lines.



The beam spots should be parallel to the wall.
If not, adjust the grating.

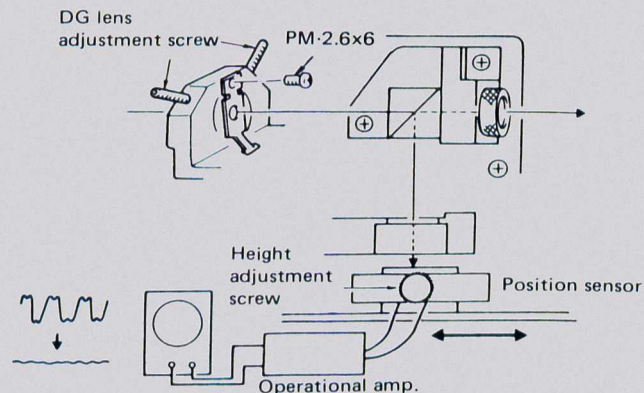
15-2. Adjustment of 1/4-wave plate ass'y

- 1) Turn the 1/4-wave plate ass'y and fix at the position which gives maximum reflected light at the photo detector position.



15-3. Adjustment of DG lens ass'y and DG stopper mounting

- 1) Place the position sensor in the position for the head amplifier and turn on the position sensor switch.
- 2) Adjust the position of position sensor jig and the position sensor height adjustment screw to obtain 0V of the position sensor output.



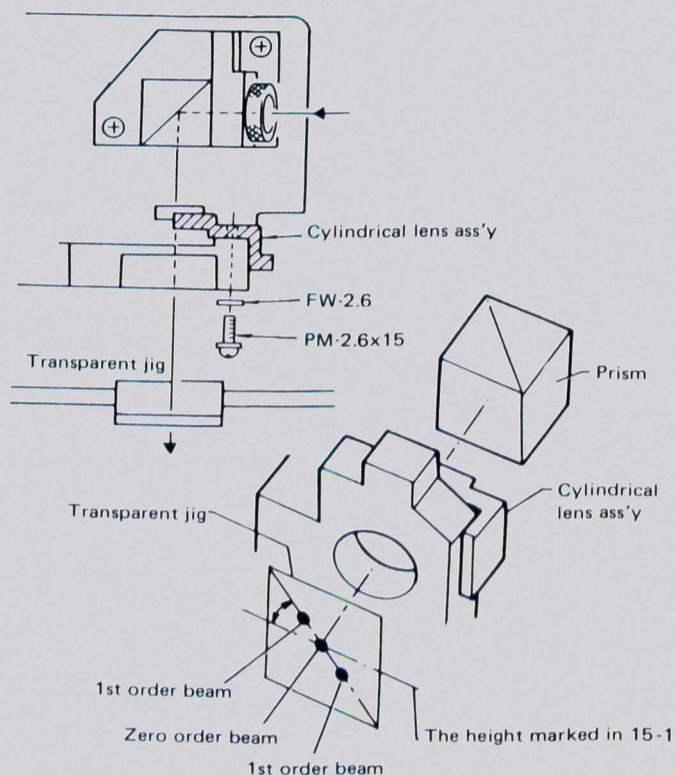
- 3) Adjust (and fix) the position of the DG lens ass'y to obtain the minimum AC voltage at the position sensor output.

15-4. Cylindrical lens mounting and adjustment

- 1) Mount the cylindrical lens temporarily.
- 2) Adjust the height of the cylindrical lens so that the zero order beam is focused onto the transparent jig at the same height as before.

NOTE:

Don't take the 1st order beam for the zero order beam.



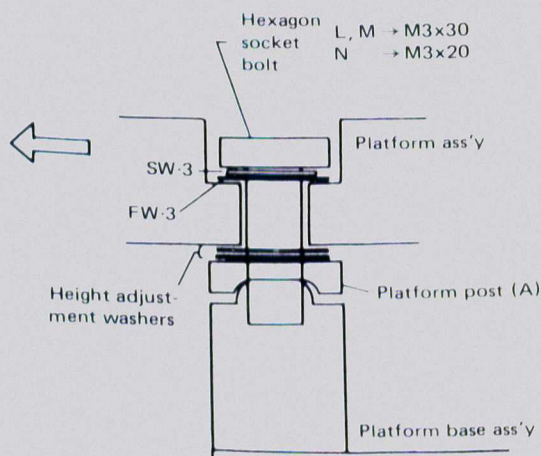
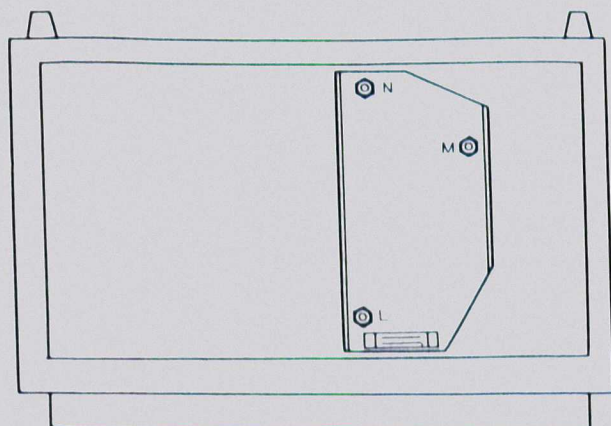
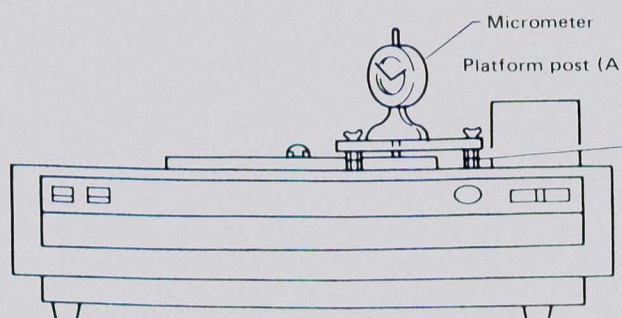
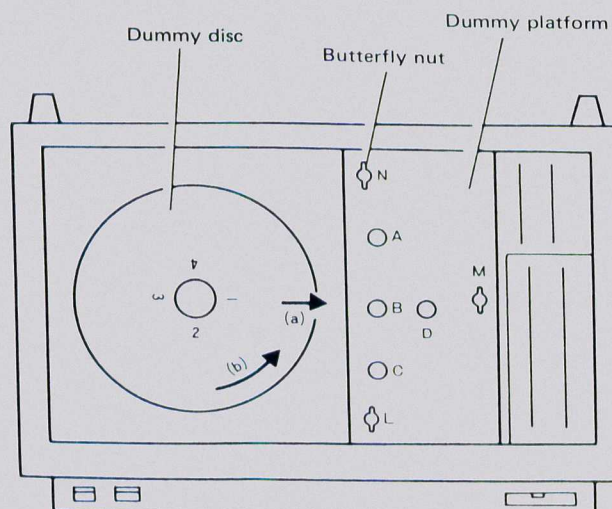
15-5. HEDA ass'y mounting

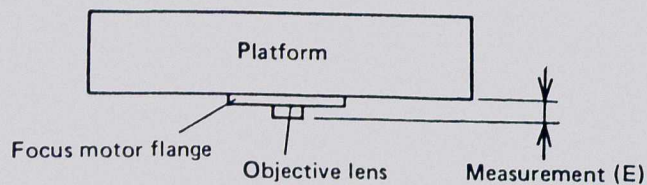
- 1) Fix the HEDA ass'y with the screws.

16. Mounting the platform in the deck

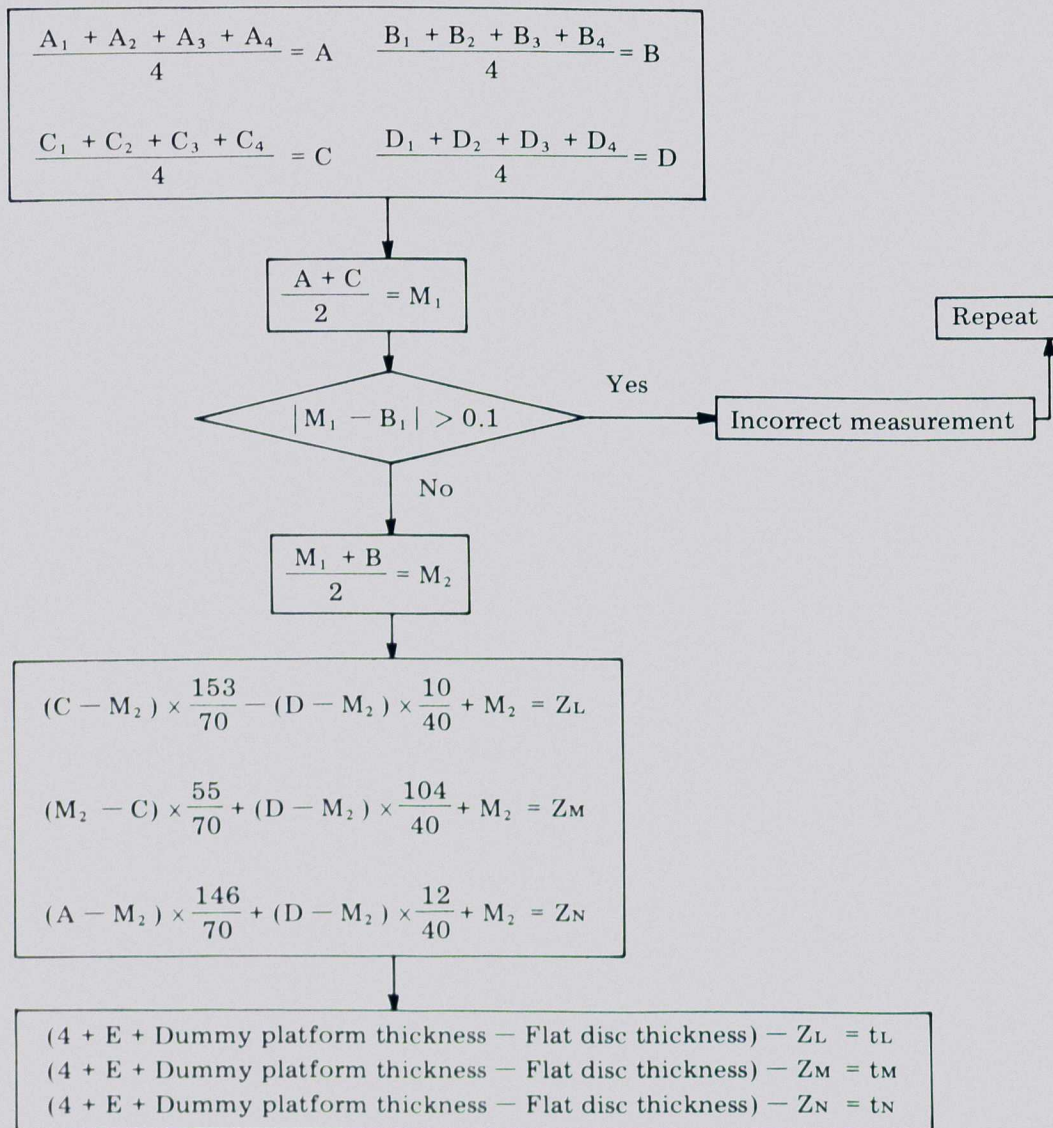
Setting and measurement procedure

- 1) Set the dummy platform.
At this time, insert the platform posts(A) between the platform base and the dummy platform and fix with the butterfly nuts.
- 2) Set the dummy disc.
- 3) Turn the number 1 side of the dummy disc toward the platform.
Push the disc slowly to the arrow (a) until it stops.
- 4) Insert the micrometer into the hole A and measure the distance from the disc surface to the top of the dummy platform.
Measure at the hole B, C, and D in the same way.
- 5) Turn the disc to the arrow (b) and repeat the measurement of state 4) in the 3 other directions (number 2, 3, and 4).
- 6) Remove the butterfly nuts and the dummy platform. Be careful not to fall the platform post (A) into the deck.
- 7) Remove the dummy disc.
- 8) Determine the thickness of the L, M, and N spacers according to the calculations flow chart.
- 9) Put the washers of different thicknesses (0.1mm, 0.2mm, 0.5mm, 1mm) on L, M, and N platform post to make the determined thicknesses.
- 10) Place the platform and fix with the hexagon socket bolts, M3×30 for L and M, M3×20 for N.



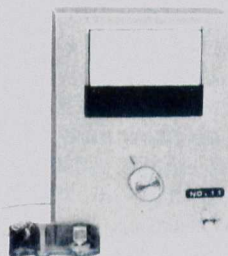


* Calculations



*where t_L , t_M , and t_N are the L, M, and N post spacer thicknesses.

17. Platform adjustment jigs list



Poralization adjustment jig/power meter



Prism adjustment jig II



3rd optical axis jig



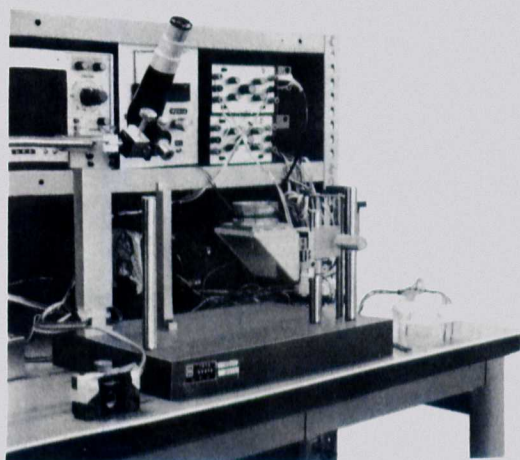
Transparent jig



Slitting jig



2nd adjustment jig



STATIC ADJUSTMENT JIGS

High voltage power supply
Position sensor amp.
Operational amp.
Mobile reflection mirror amp.
Platform holder
Tool scope
Position sensor
Mobile reflection mirror



Reflection mirror jig

OTHERS

Tracking ass'y adjustment jig
Depth micrometer
Dummy platform
Dummy disc
Oscilloscope
Audio SG

— MEMO —

2. GENERAL ADJUSTMENTS

Check the following points prior to commencing a general adjustment of the PR-7820.

1. Check all power supply voltages, and the positions of all microswitches. Also check resistance ($150 \pm 50\Omega$) at CARG. POT. end position.
2. Preset the DSPL VR1 & 2 (Anticipate Outside & Inside). (Turn VR1 clockwise and VR2 counter-clockwise to max position).
3. Check FFMP operation (focus motor lens up by power switch ON $\leftrightarrow$ OFF during "battery support").
4. Check that the SYNC selector switch is in the INT position, the VTBC loop switch in the O/L

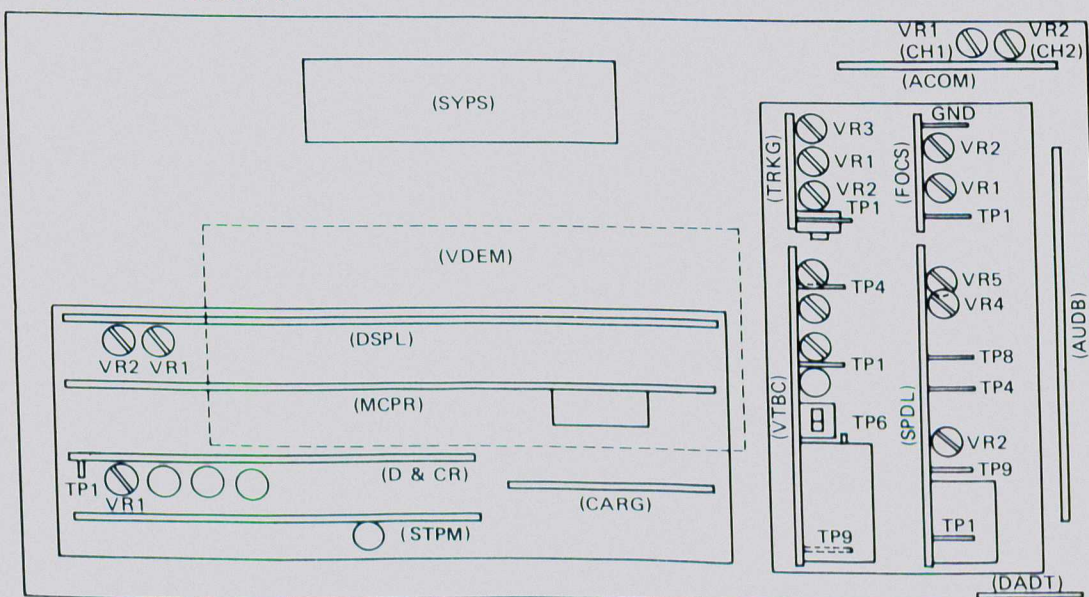
position, and the TRKG loop switch in the C/L position.

5. All discs used should be UPC test discs (CAV, CLV, and program dumping).
6. Although the μ -com is used, operate in service mode until completion of platform adjustments.

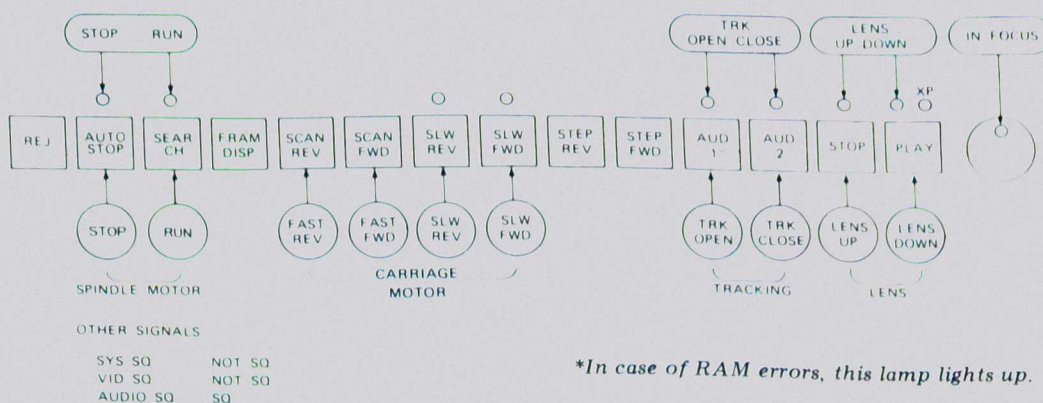
NOTES:

1. Since LENS UP & DOWN can also be operated manually, immediately move the lens up (stop/push operations) if proper focus is not attained.
2. When the PARK or END position is reached during SCAN FWD & REV MODE, release the button immediately.

ADJUSTMENT LOCATION



TEST MODE



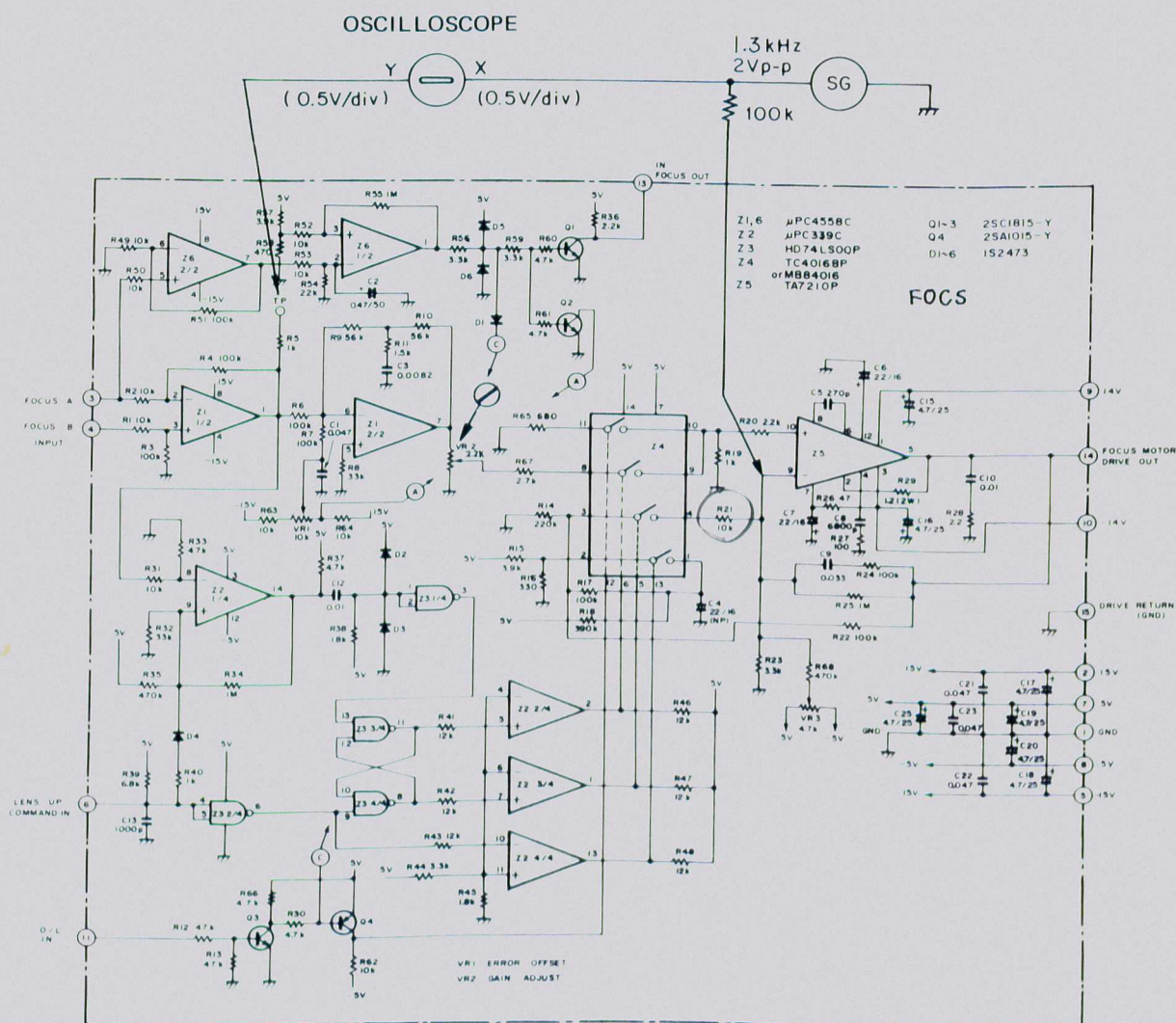
*In case of RAM errors, this lamp lights up.

STEP NO.	Adjustment circuit board (and VR No.) or name of adjustment position.	TP NO.	Disc and conditions	Adjustment and check details
1	TRKG VR3		CAV	Set μ -com to service mode (& RAM CLEAR) Turn power switch on while pressing the RAM CLEAR switch.
2			CAV	Spindle running check Confirm the Spindle running when the SEARCH button is pressed, and Spindle stop when the AUTO STOP button is pressed.
3			CAV	Carriage operation check Switch back and forth between PARK and END position by SCAN FWD and SCAN REV. modes, and check for normal carriage transport speed.
4			CAV	TRKG. mirror bias check Check that the voltage of TRKG. mirror drive position, is a $0V \pm 0.1V$ (readjusting VR3 at TRKG O/L if necessary).
5			CAV	Proper focussing check (Set the FOCS gain VR2 into an approximate 10 o'clock position). Check the proper focussing is obtained while switch back and forth between PLAY (lens down) and STOP (lens up) positions.
6	PLATFORM Position Rough adjustment at Outer circumference	TRKG: TP1	CAV	Platform position adj.—1 Adjust the platform position approximately to obtain TRKG signal max at the outer disc circumference (frame no. 40,000).

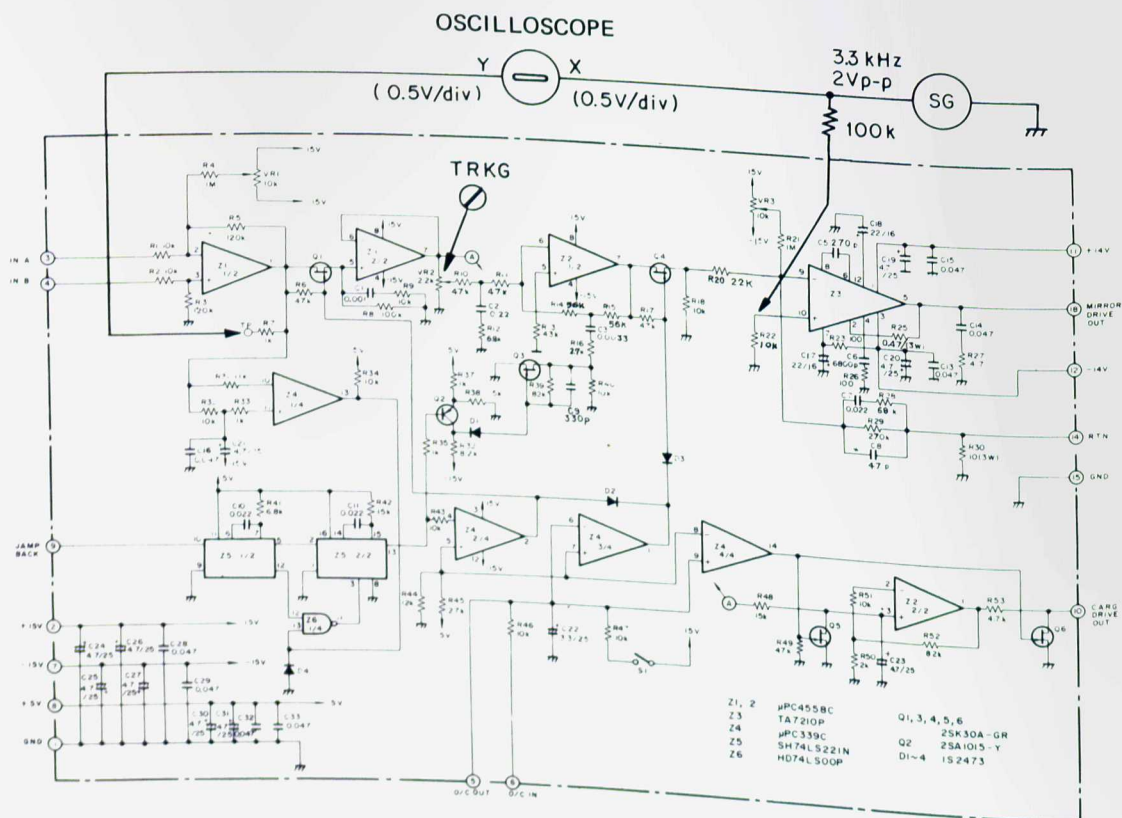
STEP NO.	Adjustment circuit board (and VR No.) or name of adjustment position.	TP NO.	Disc and conditions	Adjustment and check details
7	FOCS: VR1	TRKG: TP1	CAV	Platform position adj.—2 Adjust FOCS offset VR1 to obtain TRKG signal max.
8	PLATFORM back and forth position adjustment	TRKG: TP1	CAV	Platform position adj.—3 After shifting DISC to inside circumference (frame no. 100), fine adjust the platform back and forth position; and set temporarily at the TRKG signal max position.
9	GRATING	TRKG: TP1	CAV	Grating adjustment Shift disc to frame no 10,000, and turn the grating adjustment screw clockwise. Check positioning above the same track as the main beam with the waveform at the first TRACK signal min position. Then turn counter-clockwise, and temporarily set at TRKG signal max. Also check TRKG signal max at both frame no. 100 and 40,000.
10		TRKG: TP1	CAV	Platform position setting Check that the TRKG signal level difference between the disc outer and inner circumferences lies within the 0 ~ -4dB range. Then lock the platform set screw and grating. (If readjustment is considered necessary, repeat step 8).
11	TRKG: VR1	TRKG: TP1	CAV	TRKG O/L signal AC offset adjustment Adjust the TRKG signal waveform AC center to 0V at the disc outer circumference (frame no. 40,000). (The positive and negative peak values should be equal in respect to 0V DC). After the adjustment, turn off the beam and check that the DC level E1 lies within the range below at TP1. $-0.7V < E1 < +0.7V$ If E1 is out of the range, fine adjust the position and angle of the photo detector, unlock the grating, and repeat step 4.

STEP NO.	Adjustment circuit board (and VR No.) or name of adjustment position.	TP NO.	Disc and conditions	Adjustment and check details
12	FOCS: VR1	FOCS: TP1	CAV	Check FOCS Offset Voltage at TRKG O/L Signal Max. Push AUDIO—2 [TRAK C/L] at approximately disc frame no. 100, and read off the FOCS offset voltage (V_T). (Spec. rating: within $0V \pm 0.8V$). - 43
13	VDEM VR1 VR5		CAV F/N #100	VDEM DOS Sensitivity adjustment Stop at the innermost disc track (approx. no. 100). Turn VR1 counter-clockwise, and stop when a large number of drop-outs appear on the screen. Adjust (and then lock) VR5 to the position of minimum drop-outs on the screen. Turn VR1 clockwise as far as it will go, and lock it in that position after checking that screen drop-outs have been covered.
14	FOCS: VR1 & RF. TP. point	FOCS: TP1 & RF. TP.	CAV CLV	FOCS Offset Voltage (F/N #100) Rotate VR1 in both directions, and read off the voltages $V_{T(-)}$ & $V_{T(+)}$ where drop-outs start to appear (at about the same drop-out level). The setting voltage V_T will then be about halfway between these 2 voltages. Also turn VR1 to obtain RF max., and read off the RF level (E_{RM}) at that time. The RF level at the V_T setting will become E_{RT} . Spec. rating: $V_T \leq 0.8V$ $E_{RT}/E_{RM} > 0.85$ (Note that this may be varied by up to $\pm 0.3V$ in order to obtain a smoother envelope in the vicinity of CLV [Animal House] 50:00).
15	FOCS: VR1	FOCS: TP1	CAV	Check Voltage Difference Between RF Max. and TRKG Max. FOCS Offset Voltages After checking that the difference between V_T and the TRKG error max. offset voltage lies within the $\pm 0.7V$ range, set the offset voltage to V_T .

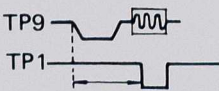
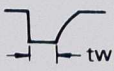
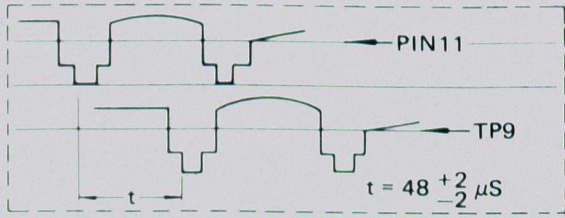
STEP NO.	Adjustment circuit board (and VR No.) or name of adjustment position.	TP NO.	Disc and conditions	Adjustment and check details
16	FOCS VR2	FOCS TP1 Z5 PIN9	CAV F/N #20,000	FOCUS Gain Adjustment 1) Set the oscilloscope into X-Y mode, and also set the SG output to 1.3kHz 2Vp-p. 2) Connect the CH-X of the scope and the SG, then apply the SG output to pin 9 of Z5 (FOCS) thru the resistor (100kilohms). 3) Connect the CH-Y to FOCS TP-1, then adjust the VR-2 to make the lissajoue's figure into a horizontal ellipse. (It means the phase shift between CH-X and CH-Y is adjusted to 90°.)



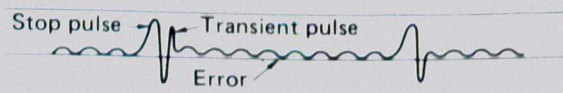
STEP NO.	Adjustment circuit board (and VR No.) or name of adjustment position.	TP NO.	Disc and conditions	Adjustment and check details
17	TRKG VR2	TRKG TP1 Z3 PIN10	CAV F/N #20,000	TRKG Gain Adjustment 1) Set the oscilloscope into X-Y mode, and also set the SG output to 3.3kHz 2Vp-p. 2) Connect the CH-X of the scope and the SG, then apply the SG output to pin 10 of Z3 (TRKG) thru the resistor (100 kilohms). 3) Connect the CH-Y to TRKG TP-1, then adjust the VR-2 to make the lissajou's figure into a horizontal ellipse.



STEP NO.	Adjustment circuit board (and VR No.) or name of adjustment position.	TP NO.	Disc and conditions	Adjustment and check details
18			F/N #100	Proper focussing and TRKG O/C check Switch back and forth between PLAY (lens down) and STOP (lens up) positions several times at the inside disc circumference (frame no. 100) to check for normal operation. Then switch back and forth between AUDIO-2 (TRKG C/L) and AUDIO-1 (TRKG O/L) several times, again to check for normal operation.
19	SPDL: VR1	Stroboscope	CLV	SPDL free run speed adjustment Adjust to about 1750 ± 50 rpm at the PARK position during μ -com service mode. Note, however, that the final specification is 1800 ± 200 rpm.
20			CLV	Set μ -com to normal mode Turn power switch off and on, and then press PLAY.
21	SPDL: VR4	SPDL: TP8	CLV	SPDL H-error offset adj.—1 Monitor the H-error, and adjust the center of the 30Hz AC component to 0V (approximate adjustment). Then check SPDL lock from the waveform.
22	SPDL: VR3 VR4	SPDL: TP8 TP11	CAV	SPDL tachometer offset adj. & H-error offset adj.—2 Adjust the tachometer error offset VR3 slowly to -0.5 V, and confirm H-lock while repeating REJECT and PLAY. If H-lock is not obtained, adjust H-error offset VR4, until H-lock is obtained. If H-lock is obtained at -0.5 V of tachometer error offset voltage, adjust VR3 to $+1.25$ V and confirm H-lock as same as above. Then readjust VR3 to obtain 0V on TP11.
			CLV	Confirm H-lock while repeating REJECT and PLAY. (at 7kHz eccentricity)

STEP NO.	Adjustment circuit board (and VR No.) or name of adjustment position.	TP NO.	Disc and conditions	Adjustment and check details
23	VTBC VR1 VR2	VTBC TP1 TP2	CAV F/N #100	Burst gate timing adjustment Set the VTBC loop O/C switch to the O/L position (VWW-003). *1. Turn VR1, and adjust the burst gate pulse negative going edge delay to 6 to $\pm 0.2\mu\text{sec}$ from the SYNC tip negative edge.  Then turn VR2 and adjust pulse width to $0.7 \pm 0.1\mu\text{sec}$.  *1: VWW-005 (new VTBC) doesn't have this switch, so set the VTBC loop to open by connecting a wire between TP11 and TP12.
24	VTBC VR4	TP4	CAV F/N #100	Error offset adjustment Adjust the AC center to 0V ($0 \pm 0.2\text{V}$), and set the O/C switch to C/L.
25	VTBC VR10	Line out	CAV #2000 ~ #3500	Video level adjustment Adjust to $1\text{V} \pm 0.1\text{V}$ (after first checking that the input level at PIN11 of the circuit board connector is $1\text{V} \pm 0.1\text{V}$).
26	VTBC VR5 VR6 VR7	TP4 TP6 TP9 PIN11	CAV ($80\mu\text{m}$ eccentricity)	H-error injection level adjustment Minimize the stepwise difference generated in the TP6 error waveform during PLAY mode at an inner disc circumference (below frame no. 1,000).  Adjust the amount of delay between PIN11 and TP9 to $48\mu\text{sec}$ ($+2, -2\mu\text{sec}$) by means of VR6 (C/L) and VR7 (O/L), and then set to O/L. PIN11 should be used for triggering at this time. 

STEP NO.	Adjustment circuit board (and VR No.) or name of adjustment position.	TP NO.	Disc and conditions	Adjustment and check details
27	VTBC	TP8 VR3	CAV (80 μ m eccentricity)	DC Drift Cancellation Adjustment Adjust VR3 to minimize the DC drift in the TP8 video signal when in stop mode at an inside disc track (no higher than frame no. 1000).
28	SPDL VR2	VTBC: TP9 SPDL: TP1	CAV	SPDL H-sync phase adjustment Align the positive going edge of the SPDL TP1 square waveform with the negative going edge of the VTBC — TP9 playback video H-SYNC. (Specification rating: $\pm 3\mu$ sec).
29	ACOM VR1 (CH1) VR2 (CH2)	AUDIO Line out	F/N #2700~ #1~	ACOM hum suppressor level adjustment Using the test disc CH1 (frame no. 2700) and CH2 (frame no. 1) unrecorded waveforms, adjust the AC level of all AUDIO outputs (particularly the 30Hz component) to minimum positions by means of corresponding VRs).
30	D & CR VR1	TP9	CAV	Valid data adjustment Adjust to the center of the range in which the valid data pulse rises.
31	TRKG VR2	TRKG TP1	F/N #10,000 #100 #45,000	TRKG stop pulse check Observe the error waveform during stop mode at about disc frame no. 10000, and check that the transient pulse doesn't exceed the stop pulse. Also check the stop pulse at the inner and outer disc tracks (about #100 and #45,000) in the same way.



STEP NO.	Adjustment circuit board (and VR No.) or name of adjustment position.	TP No.	Disc and conditions	Adjustment and check details
32			CAV	Inside limit switch position check Set the DSPL VR2 to max position in clockwise direction, and while pressing SCAN REV, pass through frame no. 0, and confirm that the carriage shifts to the center of the disc prior to hearing a mechanical shock noise.
33	DSPL VR2	Monitor	CAV	Anticipate inside adjustment Set to SCAN REV mode from the center of the disc, and adjust so that the frame numbers for carriage speed change from mid to slow will be about 500 ± 150 .
34	DSPL VR1	Monitor	F/N #49130 At above frame no. 49130 (which corresponds to frame no. 54000 when converted to the general disc).	Outside limit adjustment Set to SCAN FWD from the center of the disc, and adjust for switch over to STOP mode at a position a little above frame no. 54000. <i>CLW sooner</i> <i>CCW later</i>
35	SPDL	EXT-COMP & Line out	CAV	EXT — LOCK check Set the SYNC switch to EXT, and after applying the external COMP. SYNC and Sub carrier inputs, check that the external COMP. SYNC and LINE OUT frame & H-sync are in phase with each other. (Specification rating approximately $\pm 5\mu\text{sec}$). Also check color lock in monitor. (Also confirm absence of abnormal operation up to COMP SYNC : $2\sim 4\text{Vp-p}$, SC : $250\text{mV} \sim 2\text{Vp-p}$).

STEP NO.	Adjustment circuit board (and VR No.) or name of adjustment position.	TP NO.	Disc and conditions	Adjustment and check details
36	Check of all CAV functions		CAV	CAV disc function checks Check all CAV disc functions (front panel and remote control switches (especially STEP, SLOW, and SEARCH)).
37	TRACKING ERROR during SEARCH MODE	TRKG: TP1 SPDL: TP9 D & CR: TP9	CAV	Tracking error waveform during SEARCH mode During SEARCH mode covering frame no. 100 to 40,000, the tracking error depression should be less than -6dB. However, for -5 to -6dB cases, check that there are no SPDL playback sync omissions, and that valid data is normal.
38	CLV DISC check		CLV	Check operation with CLV disc Play a CLV disc and confirm that the color lock and X-P lamps on the monitor light up. (Also check this operation at the outer and inside circumferences, and locking at inside disc circumference by repeating REJ → PLAY several times).
39	SPDL		CLV	SPDL and free run check with CLV disc Play the CLV disc and shut the beam near the outer circumference of the disc (and wait several seconds). Then after infocussing, check that the SPDL — LOCK operates.
40	DATA-DUMPING		DUMP DISC	Data dumping operation check Turn the power switch off, and then on again and check that the AUDIO 1 & 2 indicator lamps light up. Then after PLAY/PUSH, confirm the automatic loading. (Repeat the REJ → PLAY modes several times). Next turn AUDIO—2 off, and confirm normal PLAY by REJ → PLAY operation.

STEP NO.	Adjustment circuit board (and VR No.) or name of adjustment position.	TP NO.	Disc and conditions	Adjustment and check details
41	Miscellaneous			Other check items 1) Picture quality (particularly beat and drop out). 2) VDP ↔ ANT selector switch. 3) AUDB LINE OUT (2ch). 4) Converter output. 5) EXT COMPUTER CONTROL.

2

3



57

6

1. EXTERNAL

Parts List

NOTES:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	VNA-006	Side panel L		46.	VNK-008	Hood window
	2.		Interlock		47.	VAP-006	Hood damper
	3.		Pin guide		48.	VNE-083	Interlock pin holder
	4.		Interlock holder		49.	VBH-013	Interlock spring
	5.		Door switch pin		50.	VNL-012	Interlock collar
	6.	VBK-002	Door switch leaf		51.	VLA-023	Interlock pin
	7.		Interlock link		52.	VAP-009	Rubber barrier
	8.		Pin		53.	VNA-003	Mechanical panel
	9.	VXP-003	Solenoid		54.	VEF-003	Shield sheet C
	10.	VSF-003	Microswitch		55.	VEF-002	Shield sheet B
	11.	VXA-022	Front panel assembly		56.	VXA-030	Top cover assembly
	12.		Earth spring A		57.	VAP-007	Top cover belt
	13.		Plate B		58.	VNL-001	Light acceptor
	14.	VWG-007	LMPD (Lamp driver board)		59.		Shield case A
	15.		Shield plate		60.	VWG-006	SIRB (Sub infrared board)
	16.	VWG-008	DADT (Data detector board)		61.		Shield case B
	17.	VSG-002	Door switch		62.		.....
	18.	VCG-002	Spark killer		63.	VNA-007	Side panel R
	19.	VSA-001	Power switch		64.		.....
	20.		Plate		65.	VWV-004	ACOM (Audio compensator)
	21.	VAC-004	Push knob A/white		66.		Plate A
	22.	VAC-005	Push knob B/blue		67.		Rear panel assembly
	23.	VNK-007	Button case		68.	VNL-002	Rear protector
	24.	VAC-001	Key top A		69.	VNE-032	Hinge spacer
	25.	VAC-002	Key top B/white		70.	VXA-031	Hinge assembly
	26.	VAC-003	Key top C/blue		71.	VBE-005	Nail washer
	27.	VAP-001	Button gird A		72.		Name plate A
	28.	VAP-002	Button gird B		73.		Name plate B
	29.	VAP-003	Button gird C		74.		.....
	30.	VAP-004	Button gird D		75.	VCS-002	Slide volume
	31.	VAP-008	I.R. filter		76.	VEF-001	Shield sheet A
	32.	VAP-005	Button gird E		77.	VBG-001	Knob spring
	33.		Plate		78.	VAM-006	Enblem
	34.	VAH-001	Decoration panel		79.		Door switch pin
	35.	VAC-006	Side knob		80.	VBH-010	Interlock holder spring
	36.	VWY-004	LMP1 (Lamp board 1)		81.	VLA-040	Interlock nut
	37.	VWY-005	LMP2 (Lamp board 2)				
	38.	VWY-006	LMP3 (Lamp board 3)				
	39.		I.R. plate				
	40.	VWG-005	MIRB (Main infrared board)				
	41.		I.R. shield case A				
	42.		Mask				
	43.		Angle				
	44.	VNK-005	Hood				
	45.	VNE-079	Hinge plate				

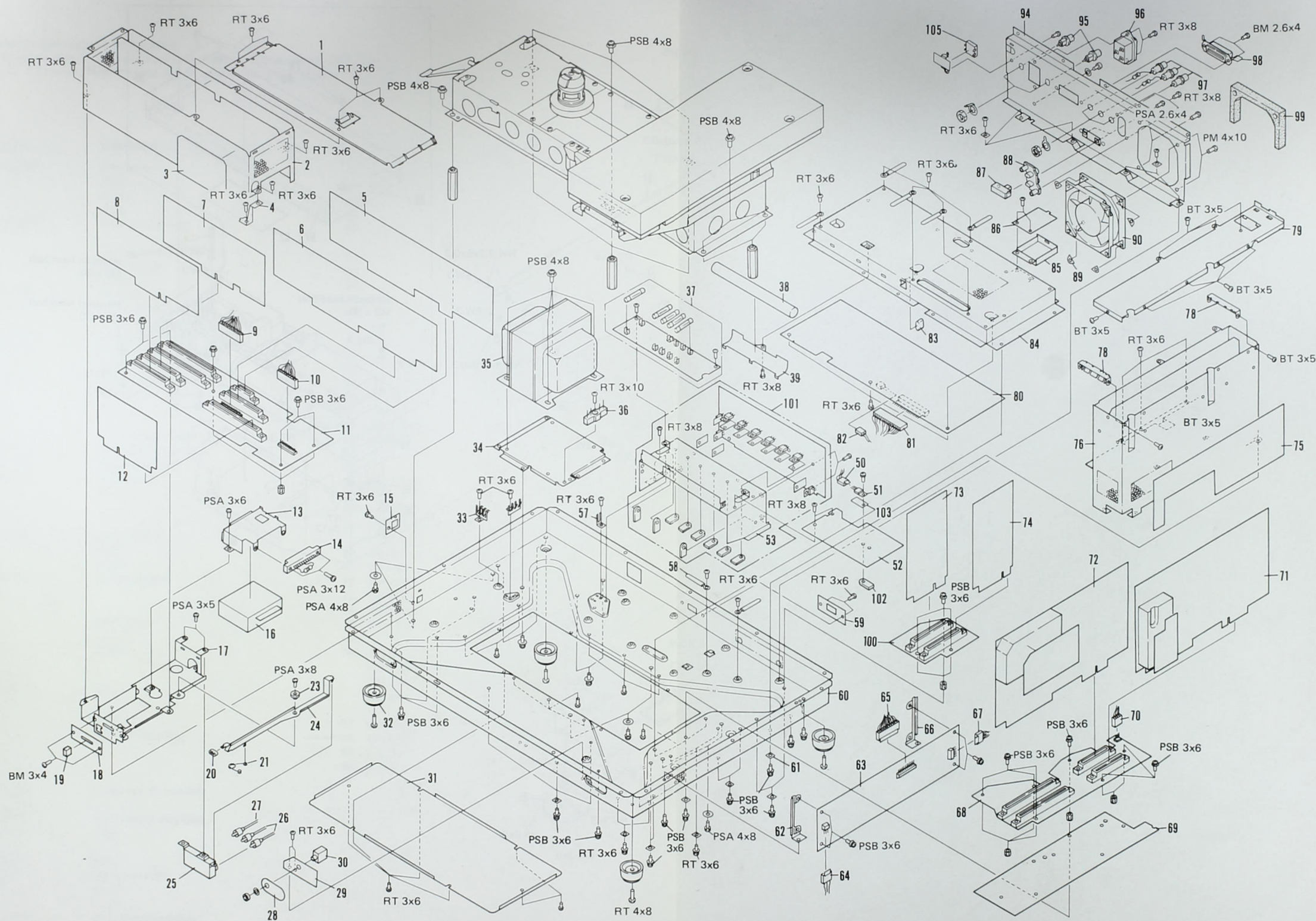
2. CHASSIS

Parts List

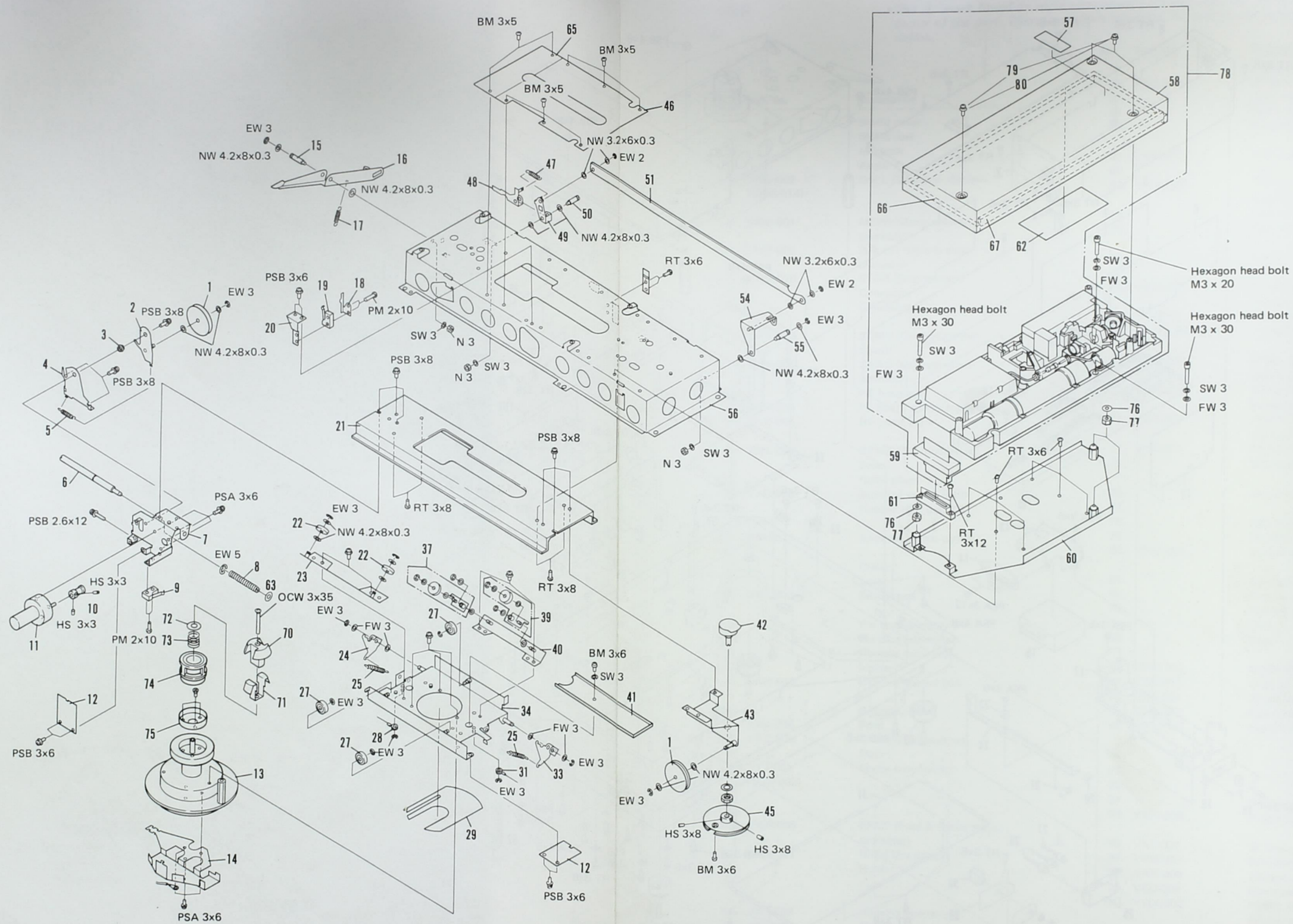
NOTES:

- Parts without part number cannot be supplied.
- The  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
					56.		Capacitor
					57.	VKC-004	2P earth lug terminal
					58.		Cord crammer
					59.		Name plate
					60.		Bottom plate assembly
	1.		Shield cover		61.	VBE-005	Nail washer
	2.		Shield case		62.		Angle
	3.		Insulator		63.	VWV-003	AUDB (Audio board assembly)
	4.		Angle		64.		Connector
	5.	VWG-002 (VWG-014)	DSPL (Character display)		65.		Connector
	6.	VWG-001	MCPR (Micro precessor assembly)		66.		Angle
	7.	VWG-003	D & CR (Data & clock recovery)		67.		Connector
	8.	VWG-010	STPM (Stop motion)		68.	VWX-003	CLMB (VTBC & Spindle mother board)
	9.		Connector		69.	VEF-007	Shield sheet G
	10.		Connector		70.		Connector
	11.	VWX-001	COMB (Control mother board)		71.	VWW-002	SPDL (Spindle servo assembly)
	12.	VWS-003	CARG (Carriage servo assembly)		72.	VWW-005	VTBC (Video time base corrector)
	13.		RF housing		73.	VWS-002	TRKG (Tracking servo assembly)
	14.	VKD-005	PC Board connector S 10p		74.	VWS-001	FOCS (Focus servo assembly)
	15.	VAK-005	RF name plate		75.		Insulator
	16.	VWL-001	RFMD (RF modulator)		76.		Shield case
	17.		Base		77.		.....
	18.		Name plate		78.		PCB holder
	19.	VAC-006	Antenna switch knob		79.		Shield cover
	20.		Rubber tube		80.	VWV-002	VDEM (Video demodulator)
	21.	VBH-014	Antenna switch spring		81.		Connector
	22.		.....		82.		Connector
	23.		Collar		83.		Rubber tube
	24.		Lever		84.		Case
	25.	VSH-003	Switch box		85.		Case
	26.		Pin plug assembly B		86.	VWR-003	CUST (Current stabilizer)
	27.		Pin plug assembly A		87.	VSH-002	Slide switch
	28.		Remote name plate		88.	VKB-001	2P pin jack
	29.		Holder		89.	VNE-052	Fan motor nut
	30.	VKN-010	Remote control jack		90.	VXM-004	Fan motor
	31.		Bottom plate		91.		.....
	32.	VNL-006	Foot		92.		.....
	33.	VKC-005	4P earth lug terminal		93.		.....
	34.		Plate		94.		Rear terminal board
	35.	VTT-001 (VTT-002)	Power transformer		95.	VKN-008	F-type connector
	36.	.....	.....		96.	VKP-001	3P inlet
	37.	VWR-004	FFMP (Fuse & Focus motor protector)		97.	VKN-007	BNC connector
	38.	VEM-001	Ni-Cd Dry battery		98.	VKN-009	Receptacle
	39.		Holder		99.	VED-004	Fan motor cushion
	40.		.....		100.	VWX-002	FTMB (Focus & tracking mother board)
	50.	VKP-008	Housing assembly G		101.	VWR-001	SYPS (System power supply)
	51.	2SD-635	Transistor		102.	VKH-001	Transistor socket
	52.		Heat sink		103.	VEC-002	Mica insulator
	53.		Heat sink		104.	VSG-001	Switch
	54.		.....				
	55.		2P terminal				



3. CARRIAGE



Man to play in

-150 Ω $\pm$ 50 Ω -

CARRIAGE

NOTES:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	VNL-009	Wire roller		46.	VNA-012	Top blind A
	2.		Plate		47.	VBH-009	Beam shutter spring B
	3.		Collar		48.		Beam shutter link B
	4.		Plate		49.		Beam shutter link C
	5.	VBH-006	Wire roller spring		50.		Pin
	6.		Carriage stopper		51.		Beam shutter link D
	7.		Motor holder		52.		.....
	8.		Spring		53.		.....
	9.	VSF-003	Microswitch		54.		Beam shutter link E
	10.	VLA-018	Motor pulley		55.		Pin
	11.	VXM-002	Carriage motor		56.		Chassis
	12.	VWY-003	NFPB (Noise filter printed board)		57.		Caution label
	13.	VXM-006	Spindle motor assembly		58.		PF cover
	14.		Cord cover		59.		PFCB
	15.		Pin		60.		Base
	16.		Beam shutter link A		61.	VKD-006	P.C. Board connector
	17.	VBH-008	Beam shutter spring A		62.	VEC-017	Amp barrier B
	18.	VBK-005	Microswitch leaf		63.		Washer
	19.	VSF-003	Microswitch		64.		.....
	20.		Plate		65.	VNA-013	Top blind B
	21.		Rail		66.	VEC-006	Cover packing L
	22.	VNL-007	Lead roller A		67.	VEC-007	Cover packing S
	23.		Plate		70.	VNL-015	Stopper
	24.		Angle		71.	VNL-014	Retainer
	25.	VBH-017	Carriage spring		72.	VNE-080	Washer
	26.		.....		73.	VBH-020	Spring
	27.		Lead roller		74.	VXX-002	Clamper
	28.		.....		75.	VXX-003	Rubber plate assembly
	29.		Spacer		76.	VBE-006	Height adjust washer 0.1 mm
	30.		.....			VBE-007	Height adjust washer 0.2 mm
	31.	VXA-046	Wire			VBE-008	Height adjust washer 0.5 mm
	32.		.....			VBE-009	Height adjust washer 1.0 mm
	33.		Angle		77.	VLA-030	Post A
	34.		Carriage assembly		78.	VGX-012	Platform assembly
	35.		.....		79.	VLL-023	Screw
	36.		.....		80.	VEB-010	Rubber washer
	37.	VXA-008	Roller arm R assembly				
	38.		.....				
	39.	VXA-009	Roller arm L assembly				
	40.		Plate				
	41.	VNA-014	Blind				
	42.	VCS-001	Potentiometer				
	43.		Angle				
	44.		.....				
	45.	VNL-010	Potentiometer pulley				

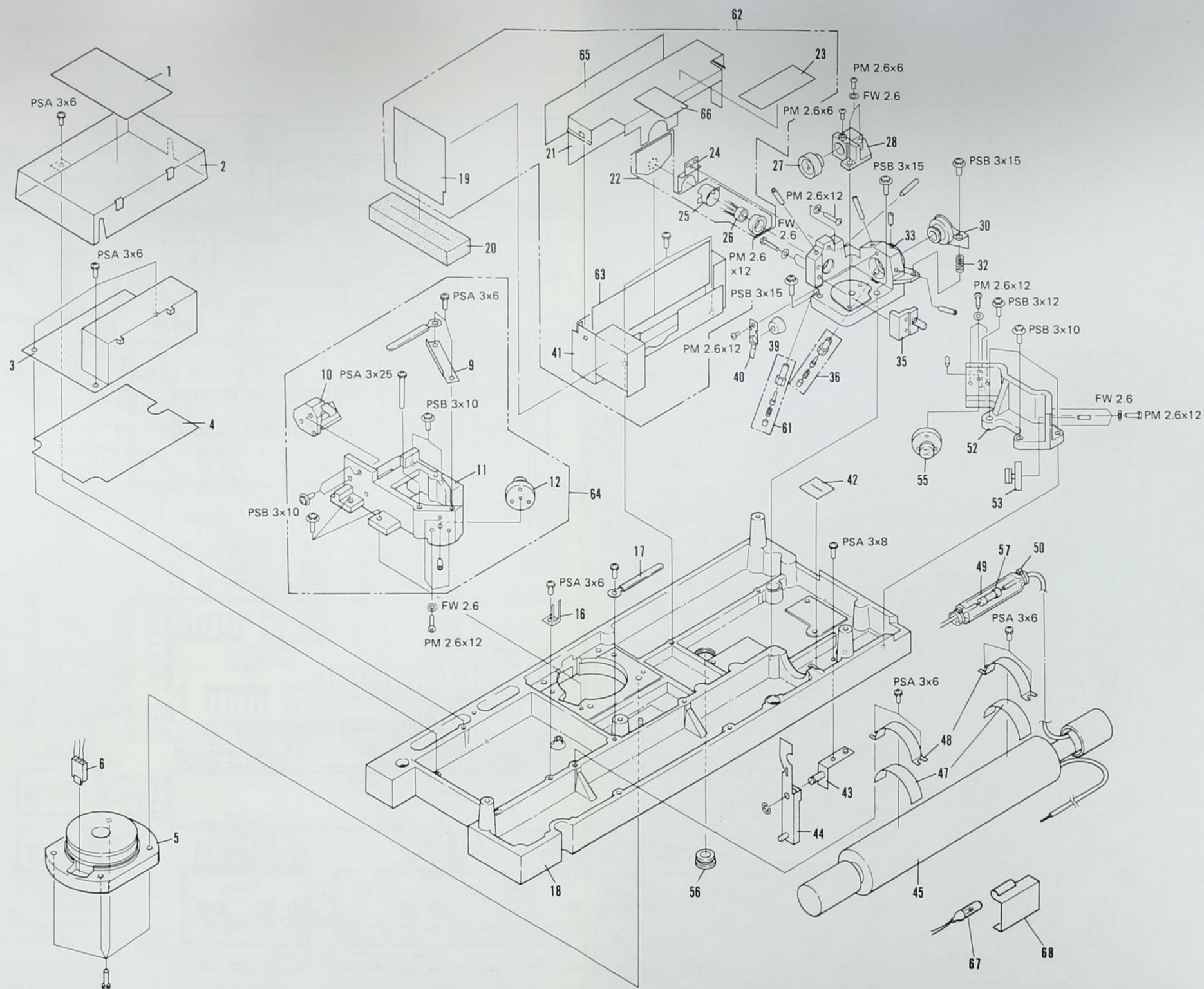
4. PLATFORM

Parts List

NOTES:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	VRW-002	Voltage label		46.		.....
	2.	VNH-005	Power supply cover		47.	VED-003	Tube cushion
	3.	VWR-002	Laser power supply		48.	VNE-008	Tube holder
	4.	VEC-008	Barrier		49.	VDM-001	Insulator tube
	5.	VXV-002	Focus motor		50.		Binder
	6.	VKP-008	Housing assembly		51.		.....
	7.		.....		52.	VNT-003	Fixed mirror base
	8.		.....		53.	VGX-002	Mirror S assembly
	9.	.....	Plate		54.		.....
	10.	VXT-003	Mirror transducer		55.	VGX-002	Mirror S assembly
	11.	.....	Base		56.	VFB-003	Cap mask
	12.	VGX-004	Mirror L assembly		57.	VCN-014	Ballast resistor
	13.		.....		58.		
	14.		.....		59.		
	15.		.....		60.		
	16.		2P earth terminal		61.	VGX-011	PD nut assembly
	17.	VNF-005	Cord clammer		62.	VWW-007	Head amp assembly
	18.		Base		63.		HEDA (Head amp)
	19.		PFCB		64.	VGX-003	Tracking assembly
	20.	VEC-005	Connector packing		65.	VEF-005	Shield sheet E
	21.		Head amp case top		66.	VEF-006	Shield sheet F
	22.		PHDB		67.	VEX-002	Lamp ass'y
	23.		Cushion label		68.	VNE-177	Lamp holder
	24.		PD plate				
	25.		PD sleeve				
	26.		Photo diode				
	27.	VGX-006	1/4 wave plate assembly				
	28.	VGX-005	Prism assembly				
	29.		.....				
	30.	VGX-009	Grating assembly				
	31.		.....				
	32.	VBH-002	Arm spring				
	33.	VNT-004	Optical support				
	34.		.....				
	35.	VGX-014	Cylindrical lens assembly				
	36.	VGX-008	DG nut assembly				
	37.		.....				
	38.		.....				
	39.	VGX-007	DG lens assembly				
	40.	VLA-011	DG stopper				
	41.		Head amp case				
	42.	VED-007	Shutter mask				
	43.	.....	Laser shutter stay				
	44.	.....	Laser shutter assembly				
	45.	VGN-005	Laser tube				
		(VGN-004)					



1. CONNECTION DIAGRAMS

A



C

□

NOTES:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω 56 × 10¹ 561 RD4PS 561J

47kΩ 47 × 10³ 473 RD4PS 473J

0.5Ω 0R5 RN2H 0R5K

1Ω 010 RSIP 010K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ 562 × 10¹ 5621 RN4SR 5621F

- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

MISCELLANEOUS PARTS LIST

P.C. BOARD ASSEMBLIES

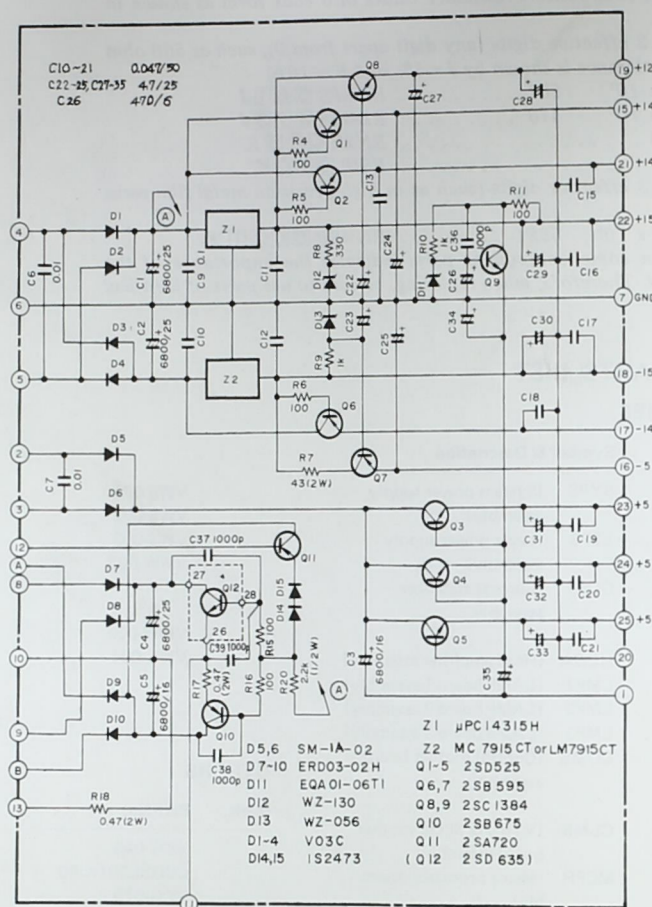
Mark	Part No.	Symbol & Description
	VWR-001	SYPS (System power supply assembly)
	VWR-002	LSPS (Laser power supply assembly)
	VWR-003	CUST (Current stabilizer assembly)
	VWW-007	HEDA (Head amplifier assembly)
	VWY-004	LMP1 (LAMP board 1 assembly)
	VWY-005	LMP2 (LAMP board 2 assembly)
	VWY-006	LMP3 (LAMP board 3 assembly)
	VWX-001	COMB (Control mother board assembly)
	VWX-003	CLMB (VTBC & SPDL mother board assembly)
	VWG-001	MCPR (Micro processor assembly)
	VWG-002 (VWG-014)	DSPL (Character display assembly)
	VWG-003	D&CR (Data & clock recover assembly)
	VWG-010	STPM (Stop motion assembly)
	VWG-005	MIRB (Main infrared board assembly)
	VWG-006	SIRB (Sub infrared board assembly)
	VWG-007	LMPD (LAMP driver board assembly)
	VWG-008	DADT (Data detector board assembly)
	VWX-002	FTMB (Focus & tracking mother board assembly)
	VWR-004	FFMP (Fuse & focus motor protector assembly)
	VWY-003	NFPB (Noise filter printed board assembly)
	VWV-003	AUDB (Audio board assembly)
	VWV-002	VDEM (Video demodulator assembly)
	VWV-004	ACOM (Audio compensator assembly)

VWS-001	FOCS (Focus servo assembly)
VWS-002	TRKG (Tracking servo assembly)
VWS-003	CARG (Carriage servo assembly)
VWW-005	VTBC (Video & time base corrector-assembly)
VWW-002	SPDL (Spindle servo assembly)
VWL-001	RFMD (RF modulator)

OTHERS

Mark	Part No.	Symbol & Description
	VCG-016	C1
	CCDSL391K 50	C2
	VCG-010	C3
	CKDYF333Z 50	C4
	RD4PS 820J	R1
	RD4PS 750J	R2, R3
	2SD635	Q1
Δ	VSA-001	Power switch
Δ	VTT-001	Power transformer
Δ	VXM-004	Fan motor
Δ	VKP-001	3P inlet
	VXM-006	Spindle motor assembly
	VXM-002	Carriage motor

2. SYPS (VWR-001)



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	VCH-001	C1, C2, C4
	VCH-002	C3, C5
	VCG-016	C6-C7
	CKDYF 104Z 50	C9
	CKDYF 473Z 50	C10-C13, C15-C21
	CKDYB102K 50	C36, C37, C38, C39
	CEA 4R7P 25	C22-C25, C27-C35
	CEA 470P6	C26

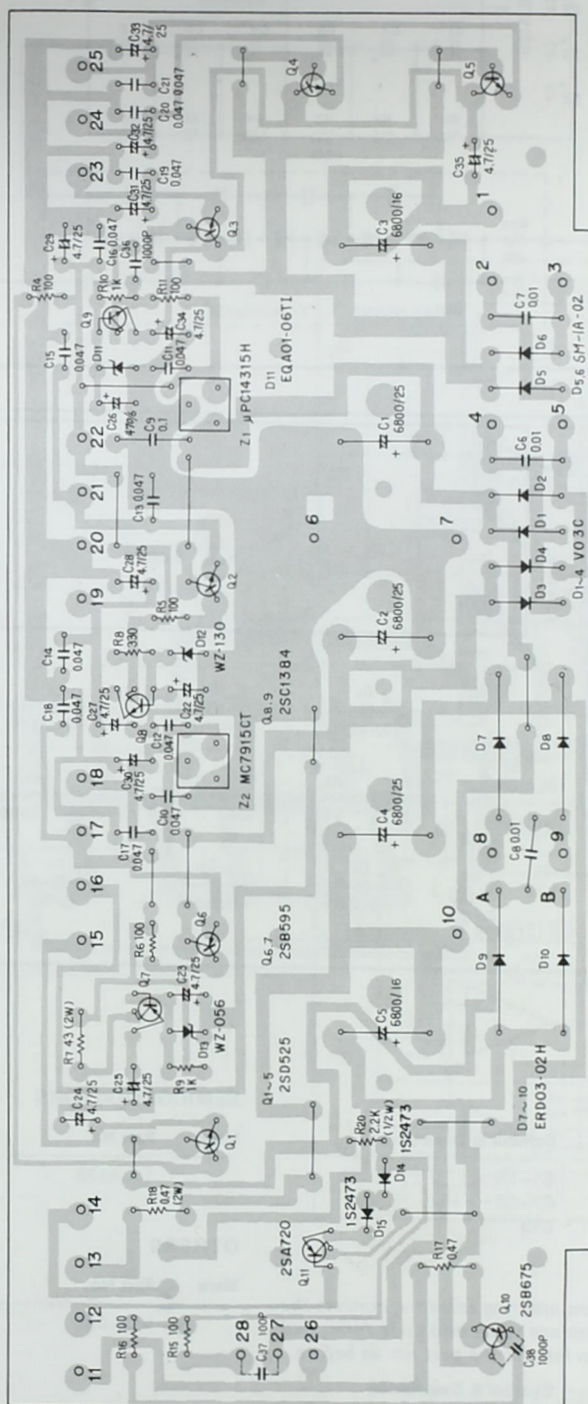
RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

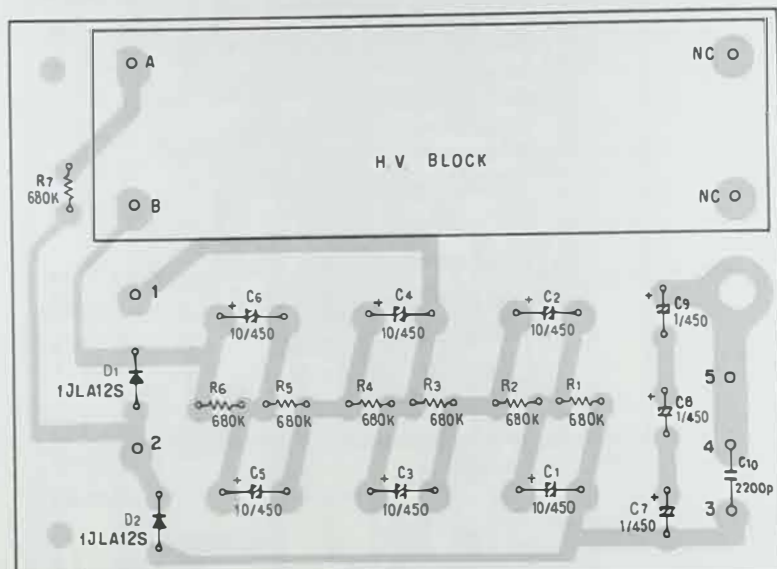
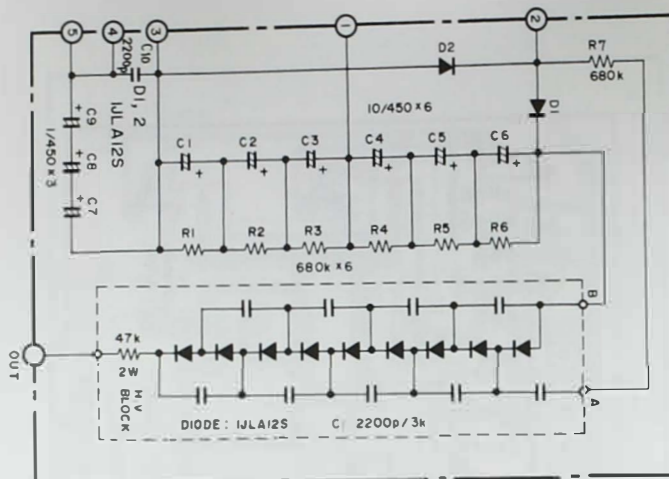
Mark	Part No.	Symbol & Description
	RD4VS □□□J	R4-R6, R8-R11, R15-R16
	RD4VS □□□J	R20
	VCN-001	R18
	VCN-002	R7
	VCN-008	R17

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	μ PC14315H	Z1
	MC7915CT (LM7915CT)	Z2
	2SA720-R or Q	Q11
	2SD525-Y or O	Q1-Q5
	2SB595-Y or O	Q6, Q7
	2SC1384-R or Q	Q8, Q9
	2SB675	Q10
	1S2473	D14, D15
	SM-1A-02	D5, D6
	ERD03-02H	D7-D10
	V03C	D1-D4
	EQA01-06T1	D11
	WZ-130	D12
	WZ-056	D13



3. LSPS (VWR-002)



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	VCH-003	C1-C6
	CEA 010P 450	C7-C9
	VCG-013	C10

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD4VS□□□J	R1-R7

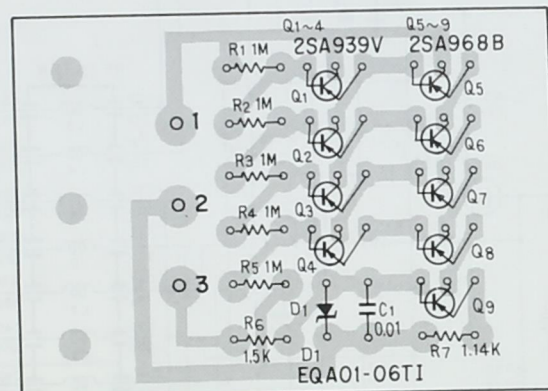
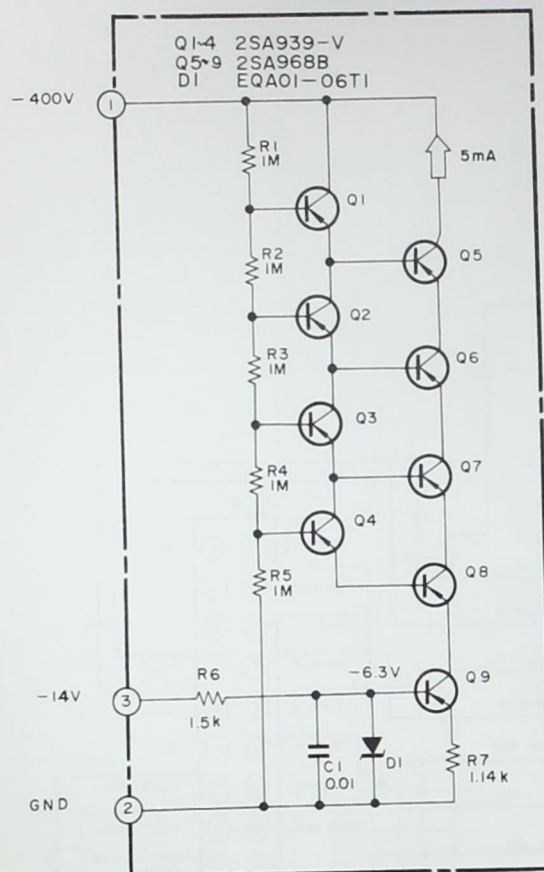
SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	1JLA12S	D1, D2

OTHERS

Mark	Part No.	Symbol & Description
	VCA-001	High-voltage block

4. CUST (VWR-003)



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CKDYF 103Z 50	C1

RESISTORS

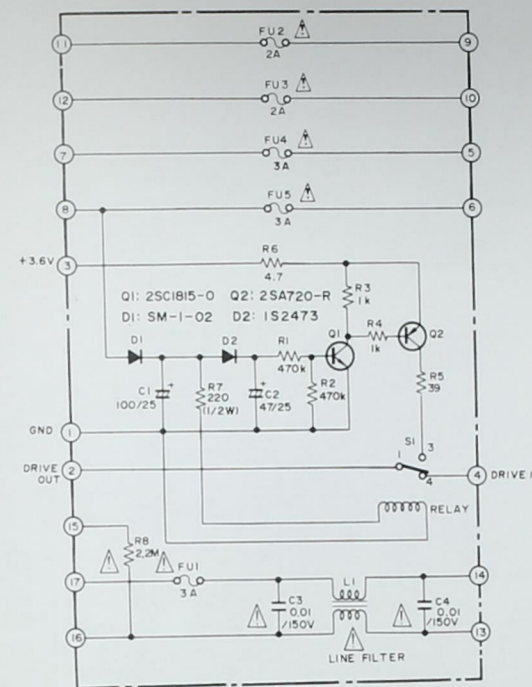
Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD%VS □□□J	R1-R6
	RN%PR □□□□F	R7

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	2SA939-V or B	Q1-Q4
	2SA968B-O or Y	Q5-Q9
	EQA01-06TI	D1

5. FFMP (VWR-004)



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 101P 25	C1
	CEA 470P 25	C2
	VCG-001	C3, C4

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD%VS □□□□J	R1-R6
	RD%VS □□□□J	R7, R8

SEMICONDUCTORS

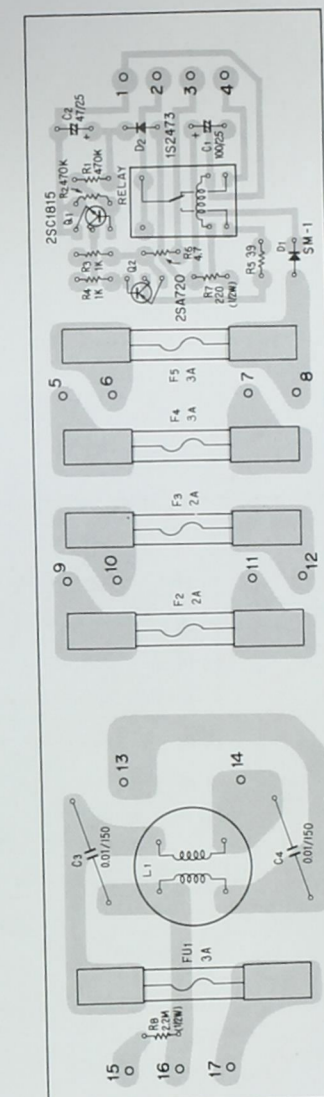
Mark	Part No.	Symbol & Description
	2SC1815-O or Y	Q1
	2SA720-R or Q	Q2
	SM-1-02	D1
	1S2473	D2

COILS, TRANSFORMERS

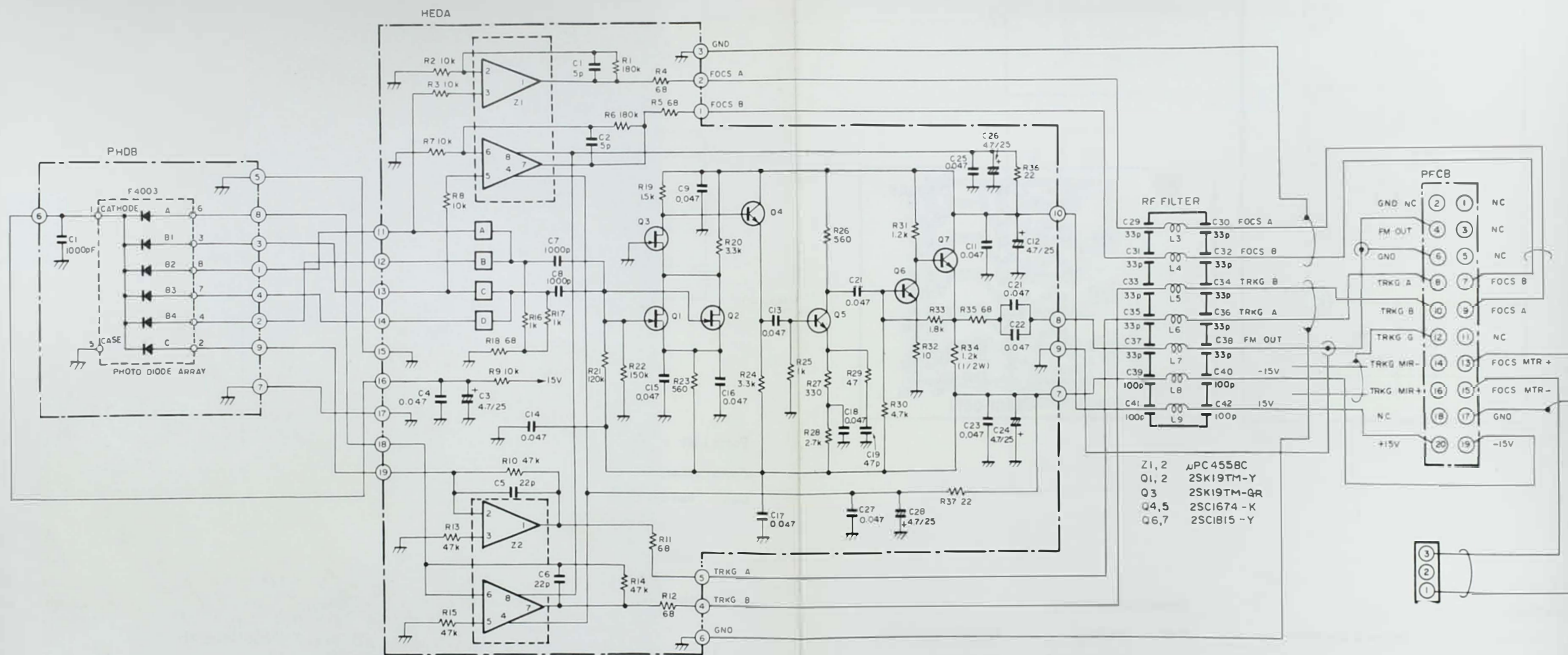
Mark	Part No.	Symbol & Description
	VTL-001	L1
	VSR-001	S1

OTHERS

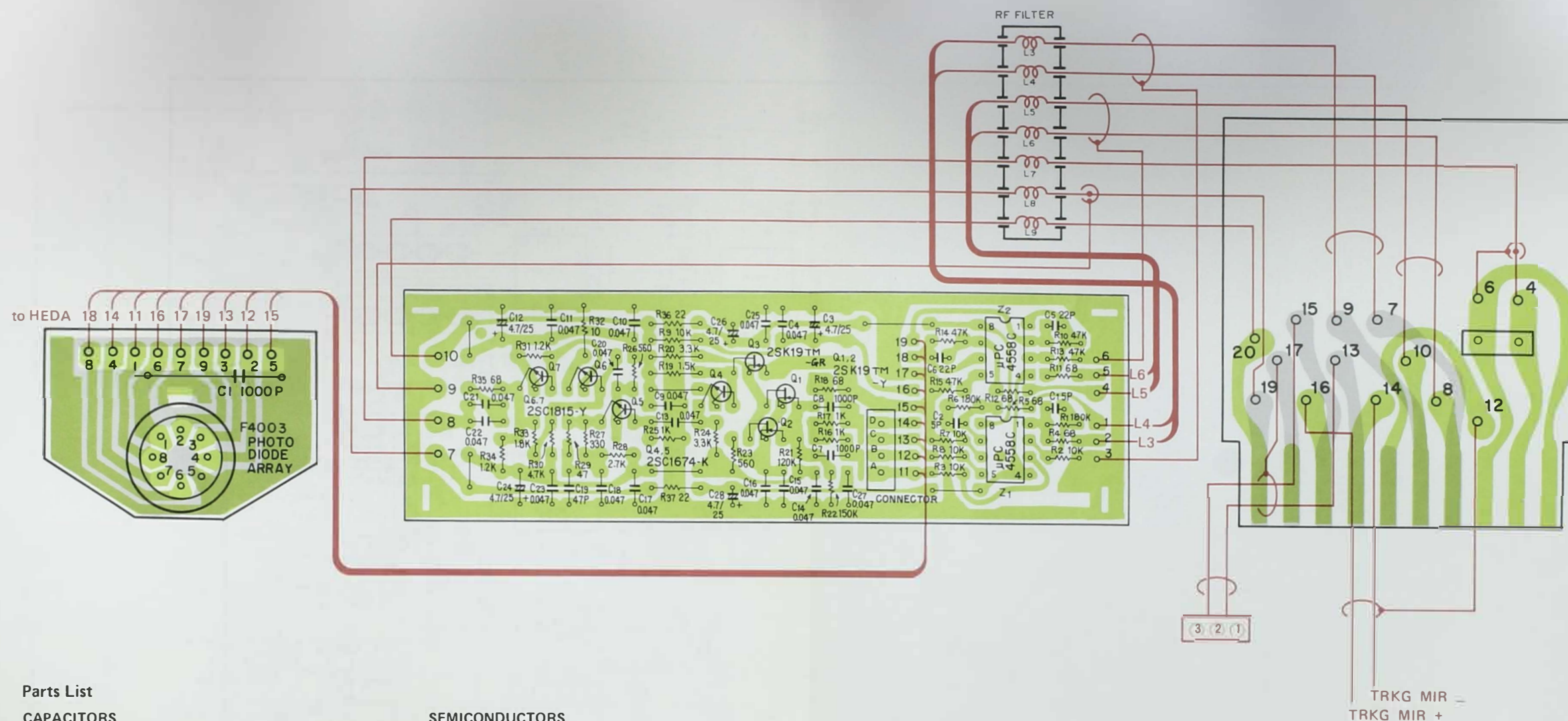
Mark	Part No.	Symbol & Description
	VEK-003	FU1, FU4, FU5
	VEK-004	FU2, FU3



6. HEDA (VWW-007)



HEDA



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 4R7P 25	C3, C12, C24, C28
	CKDYB 102K 50	C7, C8
	CCDSL 220J 50	C5, C6
	CCDSL 050C 50	C1, C2
	CQSH 470J 50	C19
	VCG-003	C4, C9-C11, C13-C18, C20-C23, C25, C27

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD%VS000J	R1-R33, R35-R37
	RD%VS000J	R34

SEMICONDUCTORS

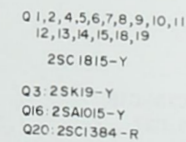
Mark	Part No.	Symbol & Description
	μPC4558C	Z1, Z2
	2SK19TM-Y	Q1, Q2
	2SK19TM-GR	Q3
	2SC1674-K	Q4, Q5
	2SC1815-Y	Q6, Q7

COILS, TRANSFORMERS

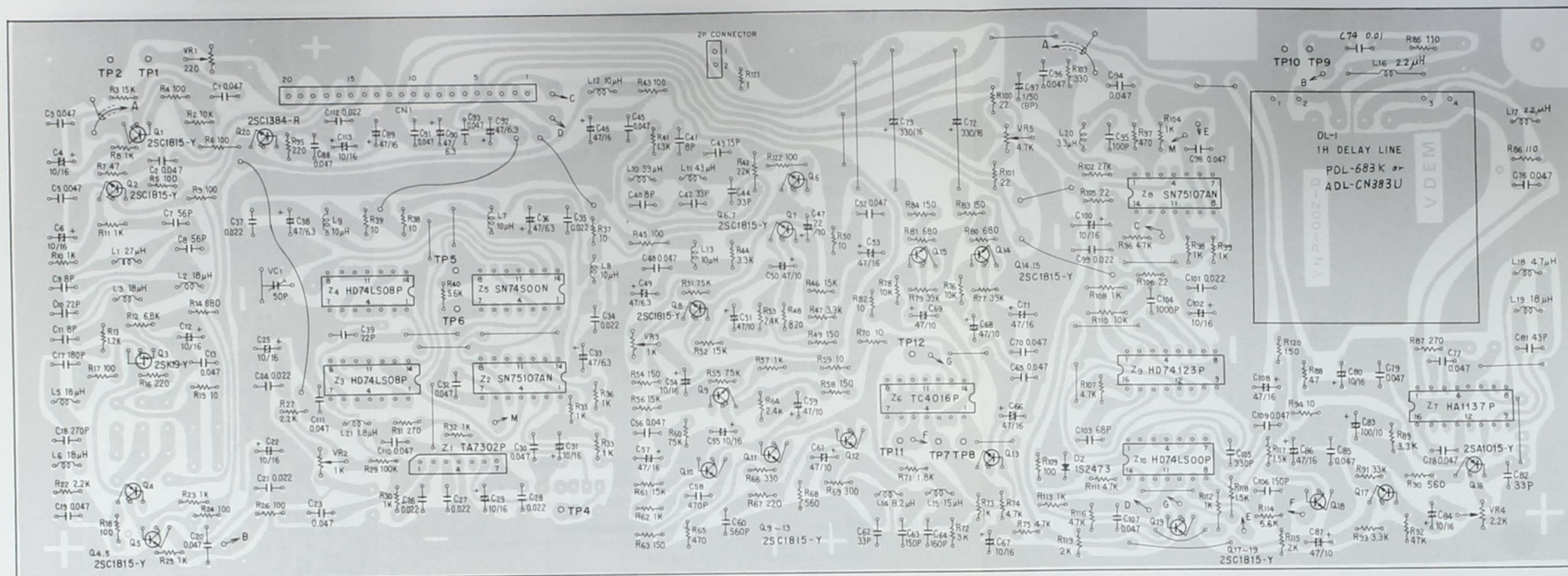
Mark	Part No.	Symbol & Description
	VTF-011	L3-L9 Filter

TRKG MIR -
TRKG MIR +

D



VDEM



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CEB 331P 16	C72, C73
	CEA 100P 16	C4, C6, C12, C22, C25, C29, C31, C54, C55, C67, C80, C84, C100, C102, C113
	CEA 470P 16	C46, C53, C57, C66, C71, C86, C89, C108
	CEA 470P 10	C50, C51, C59, C61, C68, C69, C87
	CEA 101P 10	C83
	CEA 470P 6	C33, C36, C38, C49, C90, C92
	CEA 010M 50NP	C97
	CEA 220P 10	C47
	CKDYF 473Z 50	C1-C3, C5, C13, C19, C20, C23, C30, C32, C45, C48, C52, C56, C65, C70, C74, C76-C79, C85, C88, C91, C93, C94, C96, C107, C109-C111
	CCDCH 080D 50	C9, C11, C40, C41
	CCDCH 330J 50	C82
	CCDSL 101J 50	C95
	CKDYF 103Z50	C74
	CKDYF 223Z 50	C21, C24, C26-C28, C34, C35, C37, C98, C99, C101, C112
	CQSH 150J 50	C43
	CQSH 220J 50	C10, C39
	CQSH 330J 50	C42, C44, C62
	CQSH 430J 50	C81
	CQSH 560J 50	C7, C8
	CQSH 680J 50	C103
	CQSH 151J 50	C63, C106
	CQSH 161J 50	C64
	CQSH 181J 50	C17
	CQSH 271J 50	C18
	CQSH 331J 50	C105
	CQMA 102K 50	C104
	CQSH 471J 50	C58
	CQSH 561J 50	C60
	VCM-001	VC1 Ceramic trimmer

RESISTORS

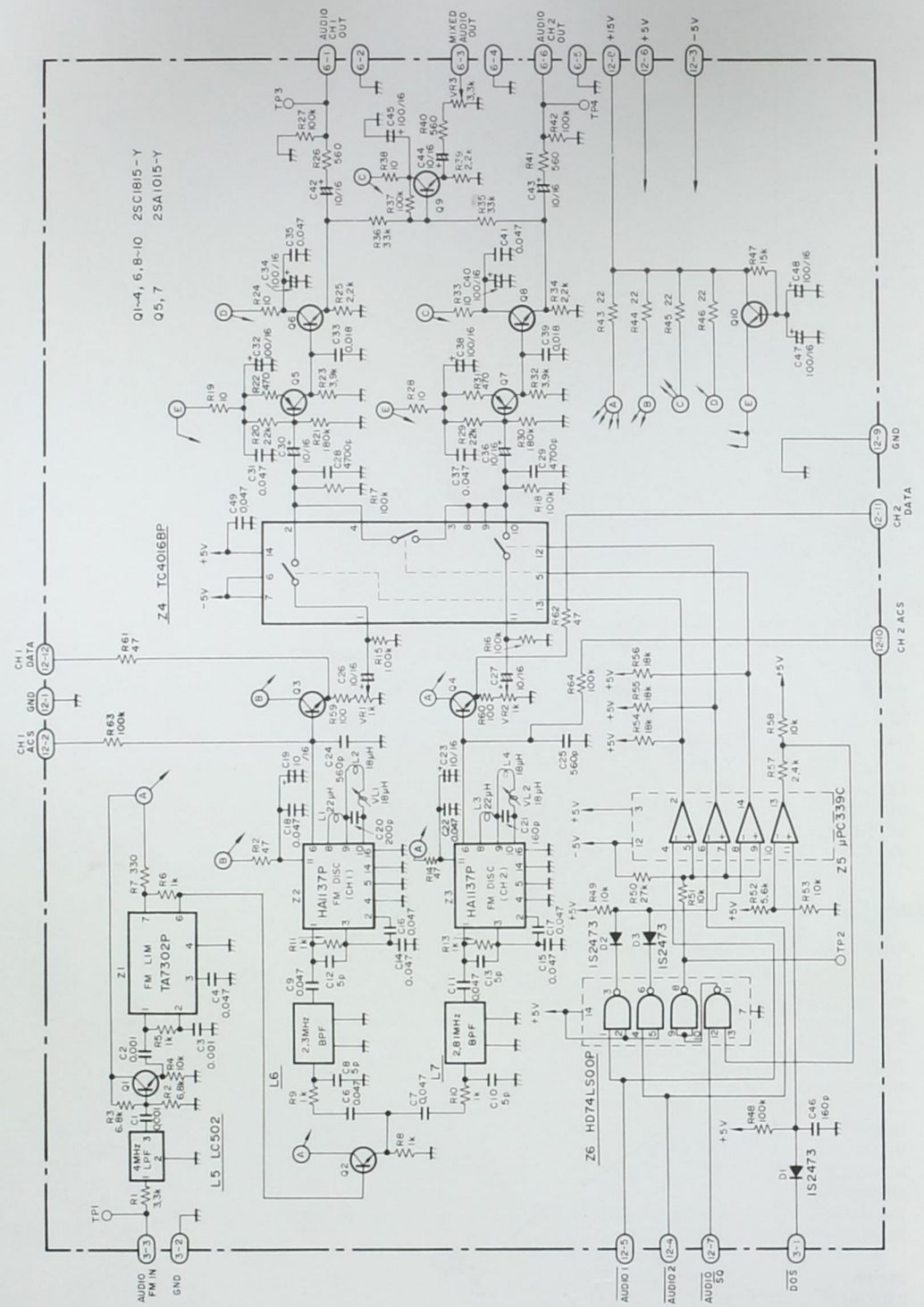
Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD%VS □□□J	R1-R18, R22-R108, R110-R120, R122
	RD%PSF □□□J	R121
	VCP-022	VR1
	VCP-024	VR2, VR3
	VCP-025	VR4
	VCP-026	VR5
Mark	Part No.	Symbol & Description
	TA7302P	Z1
	SN75107AN	Z2, Z8
	HD74LS08P	Z3, Z4
	SN74S00N	Z5
	TC4016BP	Z6
	MB84016M	
	HA1137P	Z7
	HD74LS00P	Z10
	HD74123P (SN74123N)	Z9
	2SC1815-Y	Q1-Q2, Q4-Q15, Q17-Q19
	2SA1015-Y or O	Q16
	2SK19-Y	Q3
	2SC1384-R	Q20
	1S2473	D2

COILS, TRANSFORMERS

Mark	Part No.	Symbol & Description
	VTL-015	L16, L17
	VTL-017	L20
	VTL-019	L18
	VTL-022	L14
	VTL-023	L7-L9,
	VTL-025	L15
	VTL-026	L2, L3, L5, L6, L19
	VTL-028	L1
	VTL-030	L10
	VTL-051	L11
	VTL-014	L21
	VTF-012 or VTF-013	DL1 Delay line

A
B
C
D



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CKDYB 102K 50	C1-C3
	CKDYF 473Z 50	C4, C6, C7, C9, C11, C14-C18, C22, C31, C35, C37, C41, C49
	CCDSL 561J 50	C24, C25
	CCDSL 050C 50	C8, C10, C12, C13
	CCDSL 161J 50	C46
	CQMA 183J 50	C33, C39
	CQSH 161J 50	C21
	CEA 101P 16	C32, C34, C38, C40, C45, C47, C48
	CEA 100P 16	C19, C23, C26, C27, C30, C36, C42, C43, C44
	CQMA 472K 50	C28, C29
	CQSH 201J 50	C20

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

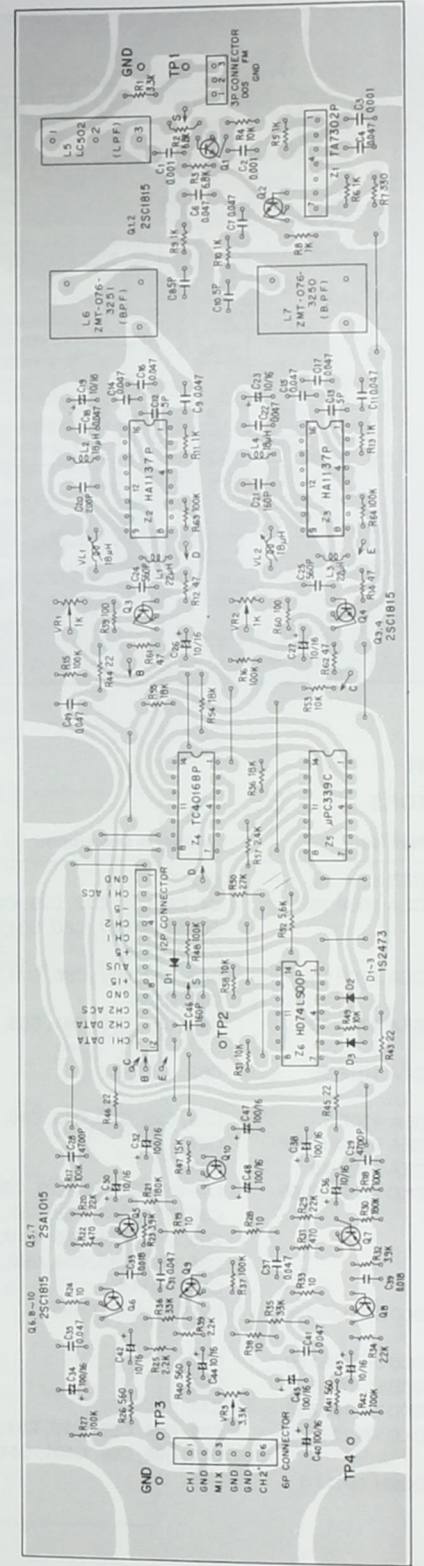
Mark	Part No.	Symbol & Description
	RD4VS 0000J	R1-R64
	VCP-034	VR3 3.3k Semi-fixed
	VCP-024	VR1 1k Semi-fixed
		VR2

SEMICONDUCTORS

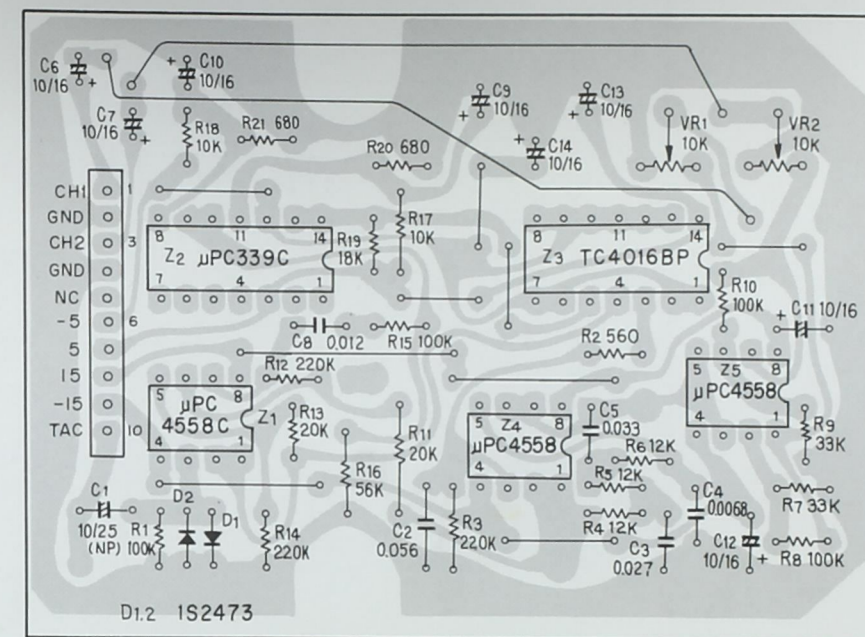
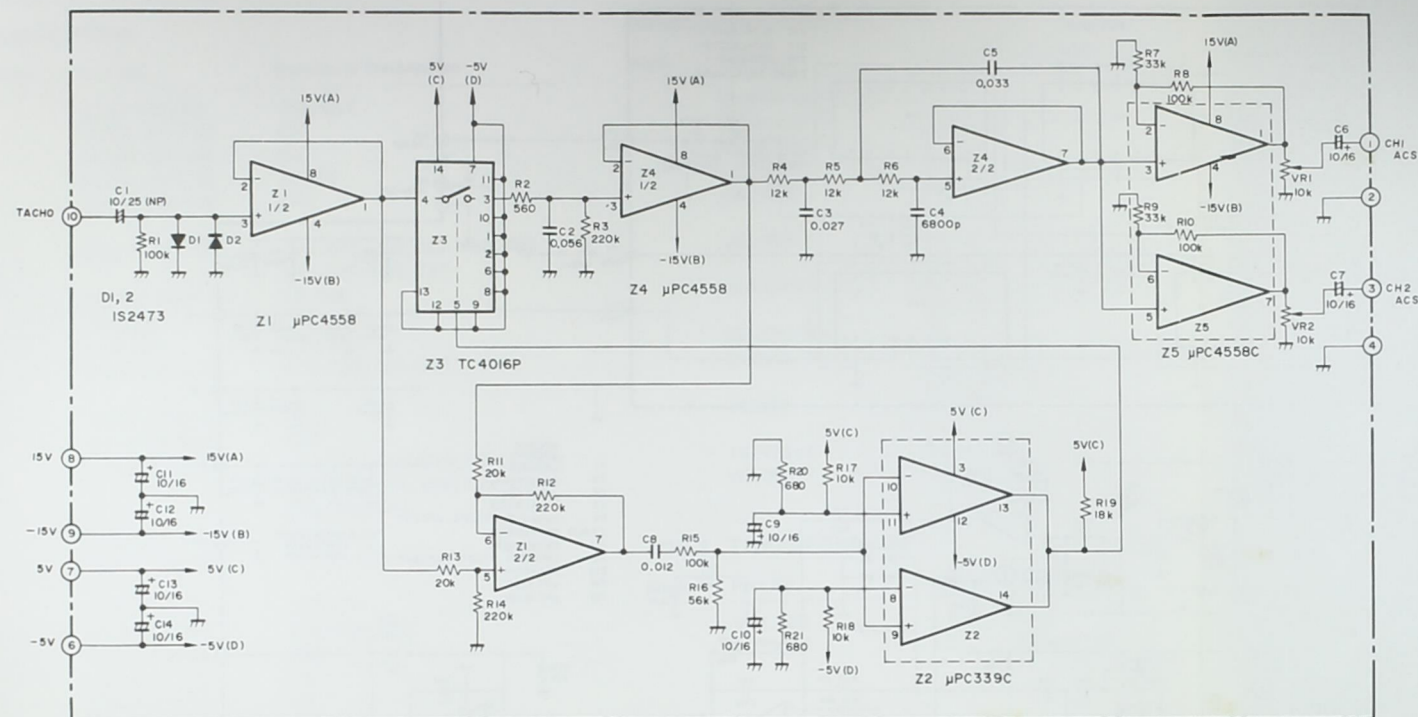
Mark	Part No.	Symbol & Description
	TA7302P	Z1
	HA1137P	Z2, Z3
	TC4016BP	Z4
	μPC339C	Z5
	HD74LS00P	Z6
	2SC1815-Y or O	Q1-Q4, Q6, Q8-Q10
	2SA1015-Y or O	Q5, Q7
	1S2473	D1-D3

COILS, TRANSFORMERS

Mark	Part No.	Symbol & Description
	VTL-027	L1, L3 Coil
	VTL-026	L2, L4 Coil
	VTF-006	VL1, VL2 Coil
	VTF-003	L5 Filter
	VTF-004	L6 Filter
	VTF-005	L7 Filter



9. ACOM (VWV-004)



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CQMA 563K 50	C2
	CQMA 273K 50	C3
	CQMA 682K 50	C4
	CQMA 333K 50	C5
	CQMA 123K 50	C8
	CEA 100P 16	C6, C7, C9-C14
	CEA 100M 25NP	C1

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD4VS □□□ J	R1-R21
	VCP-007	VR1, VR2

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	TC4016BP	Z3
	MB84016M	Z2
	μPC339C	Z1, Z4, Z5
	μPC4558C	D1, D2
	1S2473	



D



The schematic diagram illustrates the power supply section of the TSC-2000. It features three integrated circuits: Z19 SN74LS193N (330 divider), Z20 SN74LS193N (330 divider), and Z16 HD74A90AP (decade counter). The circuit includes various resistors (R202, R203, R204, R205, R200, R209, R210), capacitors (C104, C105, C106, C107, C108, C109, C110, C101, C102, C103), and a crystal (X1). A yellow circle highlights the VCC pin of Z20.

VWW-002

Parts List (SPDL A)

CAPACITORS

Mark	Part No.	Symbol & Description
	CQSH 102J 50	C16, C17
	CCDSL 471J 50	C47
	CCDSL 331J 50	C4
	CCDSL 181J 50	C1, C2
	CCDSL 270J 50	C40
	CKDYF 473Z 50	C44, C55, C56, C62, C63, C66, C67, C72, C70, C71
	CKDYB 102K 50	C9, C24
	VCE-004	C42, C48
	VCE-005	C27, C32
	CQMA 103K 50	C13, C30, C31, C41
	CQMA 472K 50	C6
	CEA4R7M25NP	C50
	CQMA 102K 50	C10, C12, C14, C18, C20, C25, C26, C28, C29, C34, C36, C37, C38, C43, C74
	CQMA 472J 50	C19
	CQMA 102J 50	C7, C8, C22, C23, C33
	CEA 101P 25	C57, C73
	CEA 101P 10	C64, C65, C68
	CEA 470P 10	C46
	CEA 4R7P 25	C5
	CEA R47P 50	C3
	CEA 010M 50NP	C15, C21, C35, C45, C11
	CEA2R2M25NP	C39

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD¼VS□□□J	R1-R29, R31-R47, R49-R78, R80-R97, R99-R165
	RN¼PR□□□□F	R48, R79, R98
	VCR-027	VR3 15k
	VCR-008	VR2 22k
	VCR-006	VR4 4.7k
	VCP-006	VR5 4.7k

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	LM311P (μPC271C)	Z1, Z6, Z12
	SN74LS221N	Z2, Z5, Z7, Z8-Z10, Z3
	SN74LS123N	Z11
	μPC4558C	Z4, Z13, Z15
	μPC339C	Z14
	2SC1815-Y	Q1, Q4-Q7, Q9, Q10, Q15, Q16, Q25, Q26, Q29, Q32-Q36
	2SA1015-Y or O	Q2, Q8, Q14, Q19, Q20, Q22-Q24, Q31, Q37
	2SK19-GR	Q3
	2SK30A-GR	Q11-Q13, Q17, Q18, Q21, Q27, Q28, Q30, Q38
	1S2473	D1-D14
	1S2473VE	D15-D18
	WZ-090	D13

COILS, TRANSFORMERS

Mark	Part No.	Symbol & Description
	VTL-038	L1 Coil
	VTF-010	L2 Peaking coil

Parts List (SPDL B)

CAPACITORS

Mark	Part No.	Symbol & Description
	CCDCH 101J 50	C102
	CCDCH510J 50	C100
	CCDUJ 101J 50	C101
	CKDYF 223Z 50	C105, C108, C109
	CCDSL 221J 50	C106, C107
	CKDYB 471K 50	C103, C104

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD¼VS□□□J	R200-R205

SEMICONDUCTORS

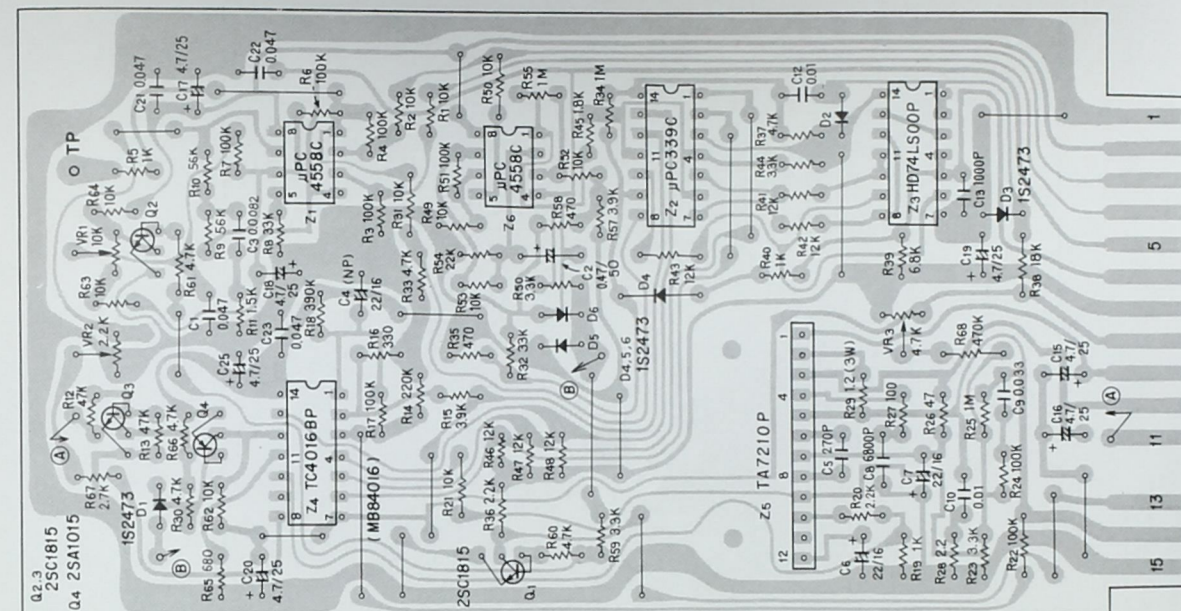
Mark	Part No.	Symbol & Description
	HD7490AP	Z18
	SN74LS193N	Z19, Z20
	HD74LS00P	Z16
	HD74LS107P	Z17

COILS, TRANSFORMERS

Mark	Part No.	Symbol & Description
	VTL-026	Coil

OTHERS

Mark	Part No.	Symbol & Description
	VSS-001	X1 X'tal
	VCM-002	VC1 Ceramic trimmer



SEMICONDUCTORS

Mark	Part No.
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Mark	Part No.	Symbol & Description
	CKDYF 473Z 50	C1, C21—C23
	CEAR 47P 50	C2
	CQMA 822J 50	C3
	CEA 220M 16 MP	C4
	CCDSL 271K 50	C5
	CEA 220P 16	C6, C7
	CKDYB 682K 50	C8
	CQMA 333J 50	C9
	CKDYF 103Z 50	C10, C12
	CKDYB 102K 50	C13
	CEA 4R7P 25	C15—C20, C25

OTHERS

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

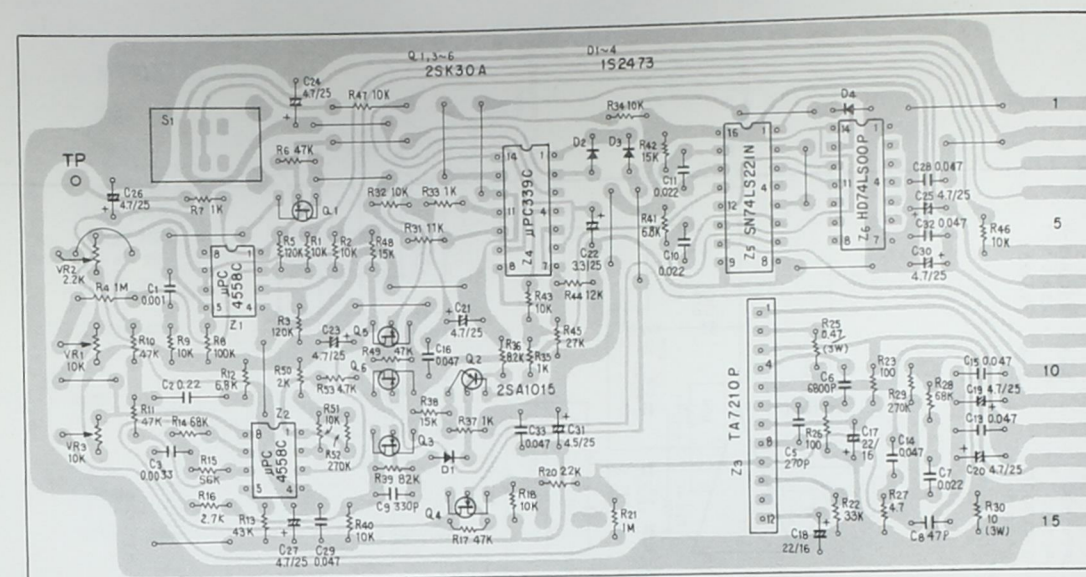
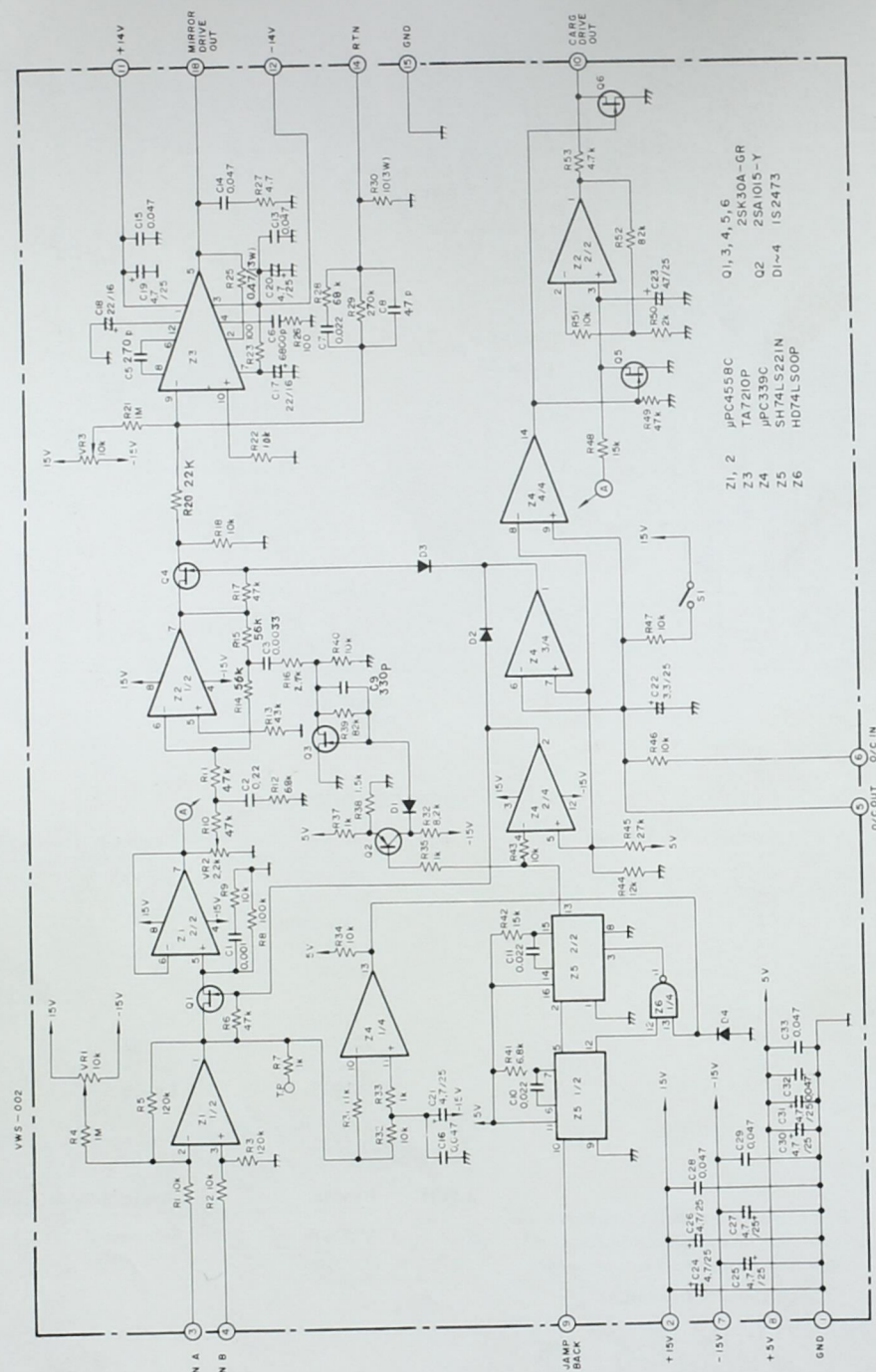
Mark	Part No.	Symbol & Description
	RD4VS□□□J	R1-R68
	VCP-005	VR2 2.2kΩ
	VCP-007	VR1 10kΩ
	VCP-026	VR3 4.7kΩ

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	μ PC4558C	Z1, Z6
	μ PC339C	Z2
	HD74LS00P	Z3
	TC4016BP	Z4
	MB84016	Z4
	TA7210P	Z5
	2SC1815-Y or O	Q1—Q3
	2SA1015-Y	Q4
	1S2473	D1-D6

OTHERS

Mark	Part No.	Symbol & Description
	VEC-001	Insulator



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CQMA 102J 50	C1
	CQMA 224J 50	C2
	CQMA 332J 50	C3
	CQMA 223J 50	C7, C10, C11
	CCDSL 470K 50	C8
	CCDSL 331J 50	C9
	CKDYF 473Z 50	C13-C16, C28, C29, C32, C33
	CCDSL 271K 50	C5
	CKDYB 682K 50	C6
	CEA 4R7P 25	C19, C20, C21, C24-C27, C30, C31
	CEA 220P 16	C17, C18
	CEA 3R3P 25	C22
	CEA 4R7P 25	C23

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD%VS □□□J	R1-R23, R26-R29, R31-R53
	VCN-008	R25
	VCN-004	R30
	VCP-007	VR1, VR3 10k
	VCP-005	VR2 2.2k

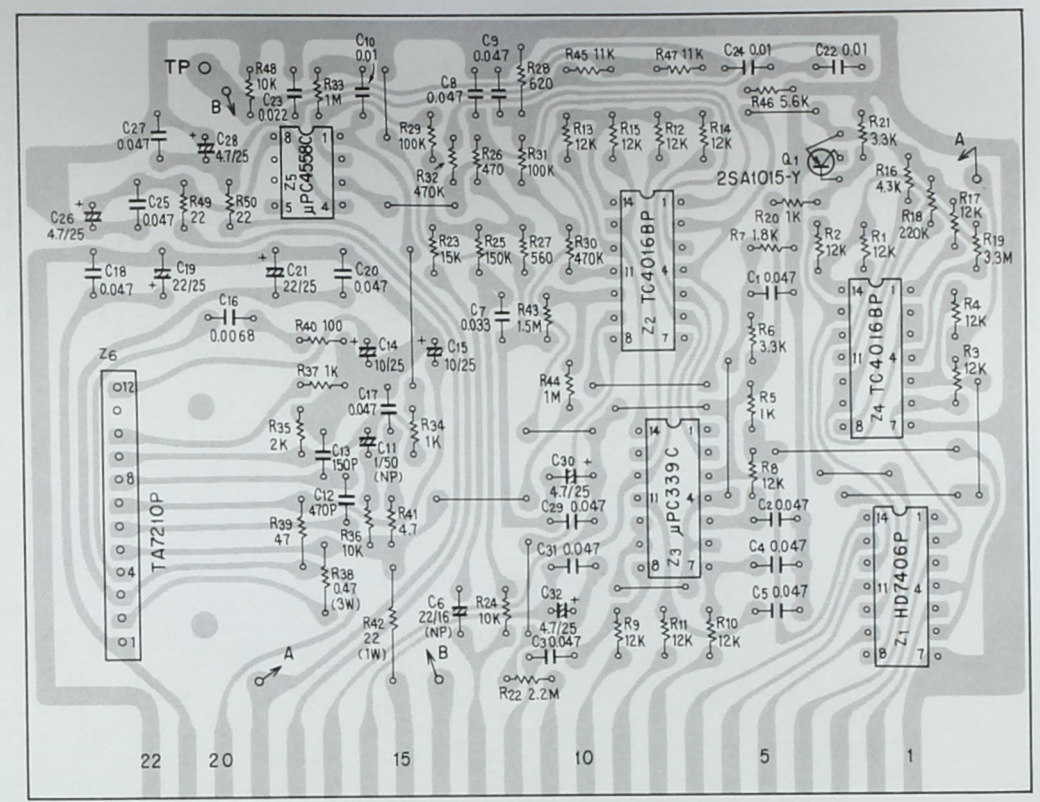
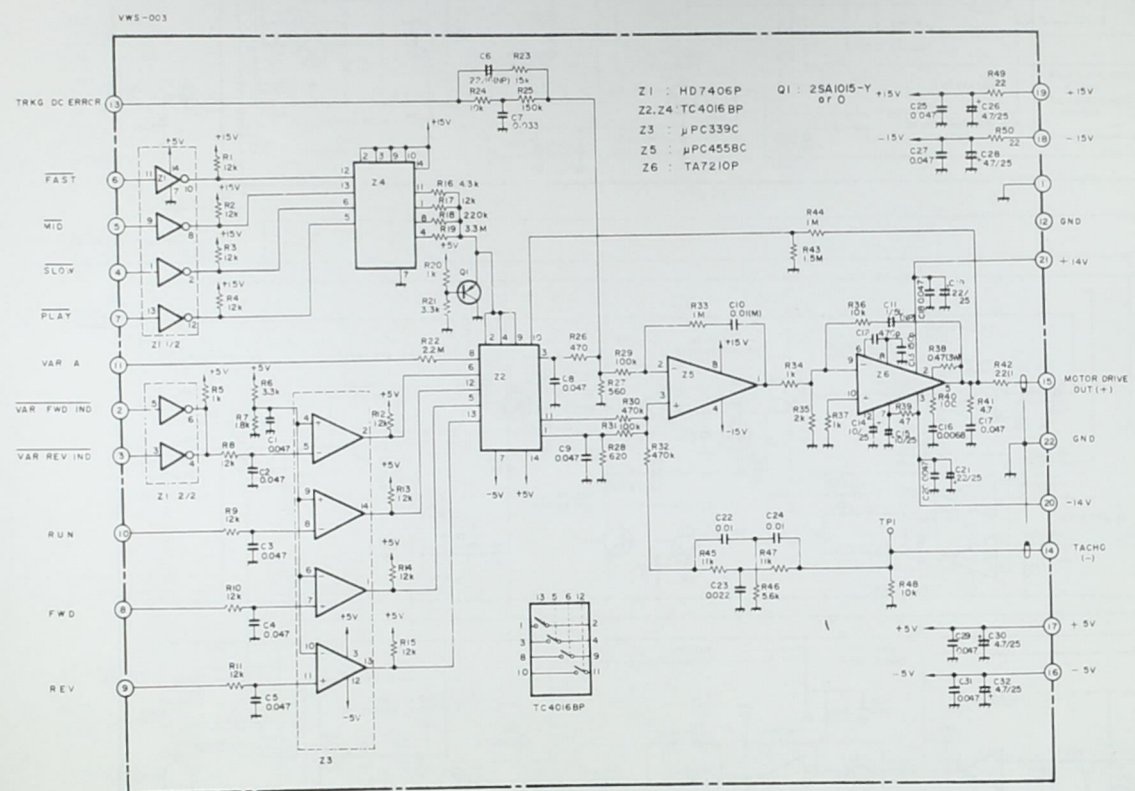
SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	μPC4558C	Z1, Z2
	μPC339C	Z4
	TA2109	Z3
	SN74LS221N	Z5
	SN74221N	
	HD74221P	
	HD74LS00P	Z6
	2SK30A-GR or Y	Q1, Q3, Q4-Q6
	2SA1015-Y or O	Q2
	1S2473	D1-D4

OTHERS

Mark	Part No.	Symbol & Description
	VEC-001	Insulator (mica)
	VSH-001	S1 Switch

13. CARG (VWS-003)



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 100P 25	C14, C15
	CEA 220P 25	C19, C21
	CEA 220P 16NP	C6
	CEA 4R7P 25	C26, C28, C30, C32
	CEA 010M 50NP	C11
	CKDYF 473Z 50	C1-C5, C8, C9, C17, C18, C20, C25, C27, C29, C31
	CKDYF 333Z 50	C7
	CQMA 223J 50	C23
	CQMA 103J 50	C22, C24
	CQMA 103K 50	C10
	CKDYB 682K 50	C16
	CCDSL 471J 50	C12
	CCDSL 151J 50	C13

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	μPC4558C	Z5
	μPC339C	Z3
	TA7210P	Z6
	TC4016BP	Z2, Z4
	MB84016M	
	HD7406P	Z1
	SN7406N	
	2SA1015-Y or O	Q1

OTHERS

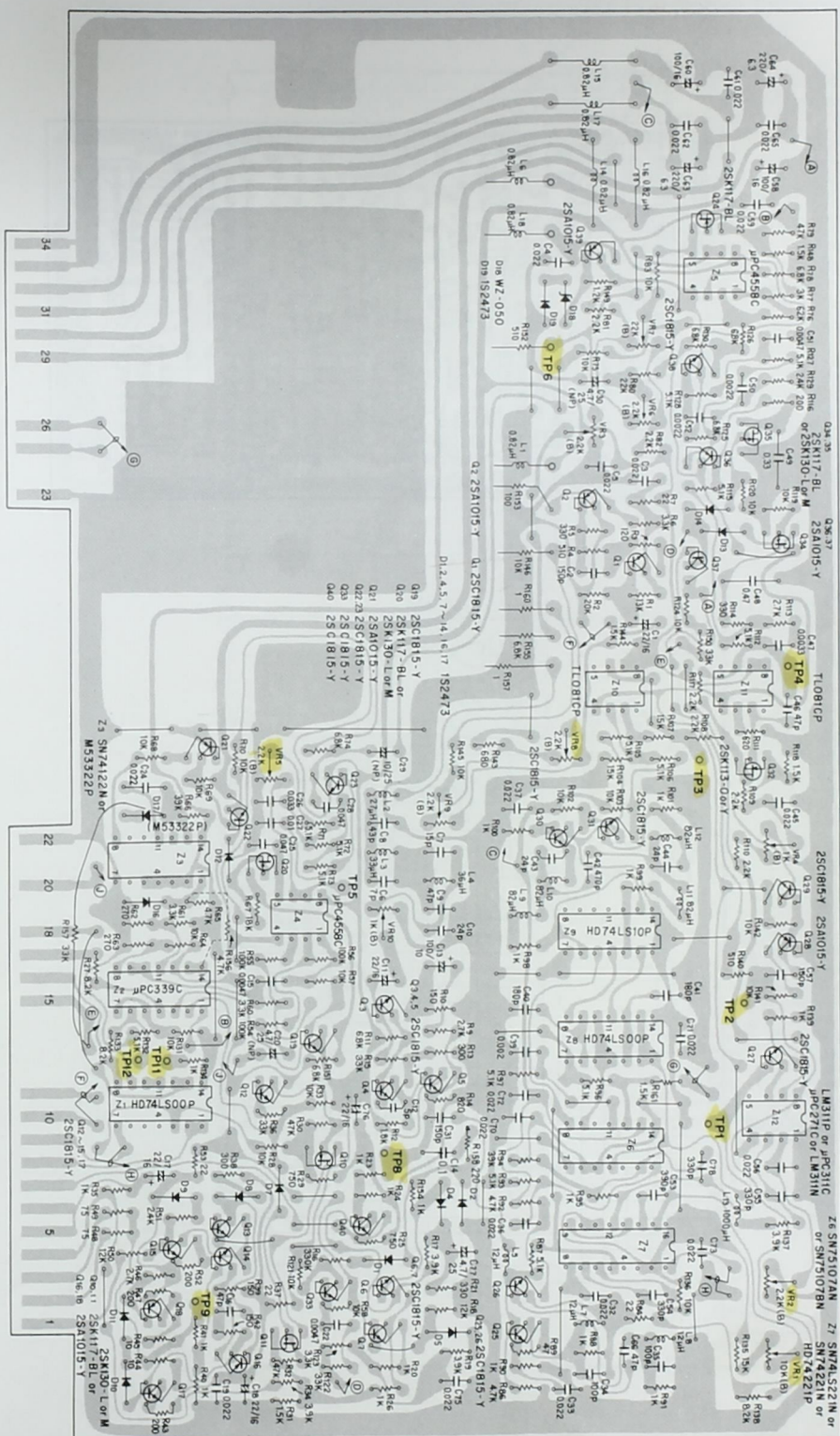
Mark	Part No.	Symbol & Description
	VEC-001	Insulator (mica)

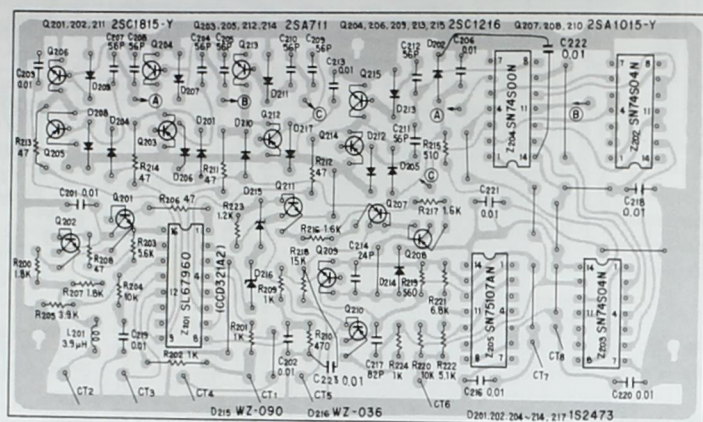
RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD¼VS □□□J	R1-R37, R39-R50
	VCN-008	R38

VTBC A





Parts List (VTBC A)

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 220P 16	C1, C11, C17, C18, C76
	CCDSL 151J 50	C2, C31, C57
	CKDYF 223Z 50	C3—C5, C19, C32, C33, C36, C37, C45, C59, C61, C62, C65, C70—72, C73, C75
	CCDSL 070D 50	C6
	CCDSL 150J 50	C7
	CCDSH 430J 50	C8
	CCDSL 470J 50	C9, C16, C46, C66
	CCDCH 240J 50	C10, C43, C44
	CCdSL 050C 50	C12
	CEA 101P 10	C13
	CQMA 104K 50	C14
	CQMA 472K 50	C15, C22, C51
	CEA 4R7M 25 NP	C20, C30
	CQMA 103K 50	C21, C27
	CQMA 223K 50	C24
	CQMA 473K 50	C25, C28
	CQMA 333K 50	C26
	CEA 100M 16 NP	C29
	CCDSL 101J 50	C34, C35
	CKDYB 102K 50	C38, C39
	CKDYB 471K 50	C42
	CQMA 332K 50	C47
	VCE-001	C48
	VCE-002	C49
	CQMA 222K 50	C50, C52
	CQSH 391J 50	C53
	CQSH 331J 50	C54
	CCDSL 331J 50	C55, C78
	CEA 101P 16	C58, C60
	CEA 221P 6R3	C63, C64
	CEA 4R7P 25	C77

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD%VS □□□J	R1—R7, R9—R21, R23—R58, R60—R84, R86—R145, R148—R151, R154
	RD%PS □□□J	R146, R152, R153, R155—R157
	VCP-007	VR1
	VCP-005	VR2
	VCP-025	VR3, VR5—VR9
	VCP-004	VR4
	VCP-024	VR10

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	HD74LS00P	Z1, Z8
	μPC339C	Z2
	M53322P	Z3
	(SN74122N)	Z3
	μPC4558C	Z4, Z5
	SN75107AN	Z6
	SN74221N	Z7
	HD74LS10P	Z9
	TL081CP	Z10, Z11
	LM311P	Z12
	2SC1815Y	Q1, Q3—Q7, Q12—Q15, Q17, Q19, Q22, Q23, Q25—Q27, Q29—Q31, Q33, Q38
	2SA1015Y	Q2, Q16, Q18, Q21, Q28, Q36, Q37, Q39
	2SK117BL	Q10, Q11, Q20, Q24, Q34, Q35
	2SK113Y or O	Q32
	1S2473	D1, D2, D4, D5, D7—D14, D16, D19
	WZ-050	D18

COIL

Mark	Part No.	Symbol & Description
	VTF-010	L1, L6, L14—L18
	VTL-053	L2
	VTL-054	L3
	VTL-055	L4
	VTL-024	L5, L7, L8
	VTL-034	L9—L12
	VTL-047	L13

Parts List (VTBC B)

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 470P 16	C80
	CKDYF 103Z 50	C201—C203, C206, C213, C216, C219—C223
	CCDSL 560J 50	C204, C205, C207—C212
	CCDCH 240J 50	C214
	CCDSL 820J 50	C217

RESISTORS

Mark	Part No.	Symbol & Description
	RD%PS □□□J	R202, R206, R211—R214, R218
	RD%VS □□□J	R200, R201, R203—R205, R207—R210, R215—R224

SEMICONDUCTORS

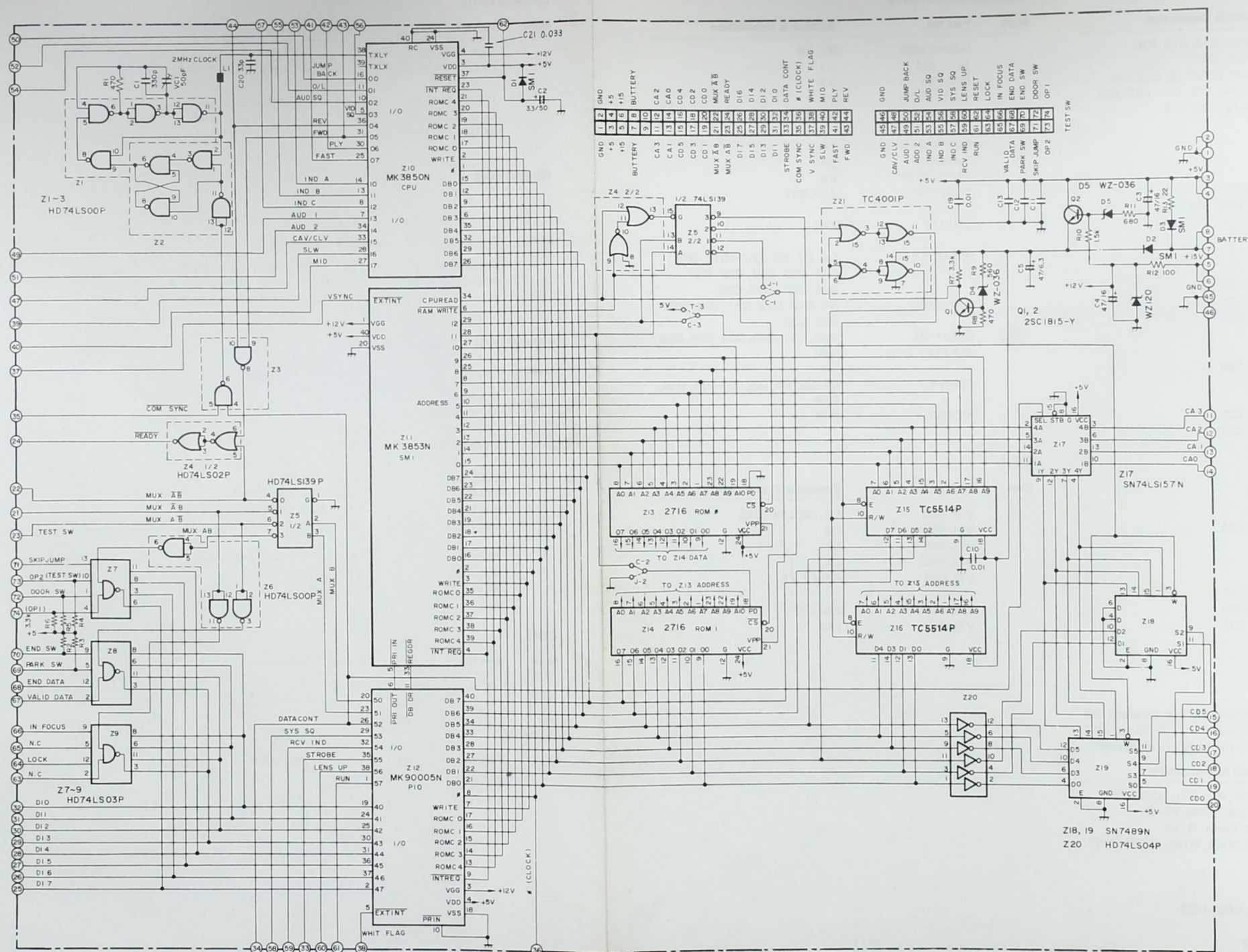
Mark	Part No.	Symbol & Description
	SL67960	Z201
	SN74S04N	Z202, Z203
	SN74S00N	Z204
	SN75107AN	Z205
	2SC1815-Y	Q201, Q202, Q211
	2SA711	Q203, Q205, Q212, Q214
	2SC1216	Q204, Q206, Q209, Q213, Q215
	2SA1015-Y	Q207, Q208, Q210
	1S2473	D201, D202, D204—D214, D217
	WZ-090	D215
	WZ-036	D216

COIL

Mark	Part No.	Symbol & Description
	VTL-018	L201

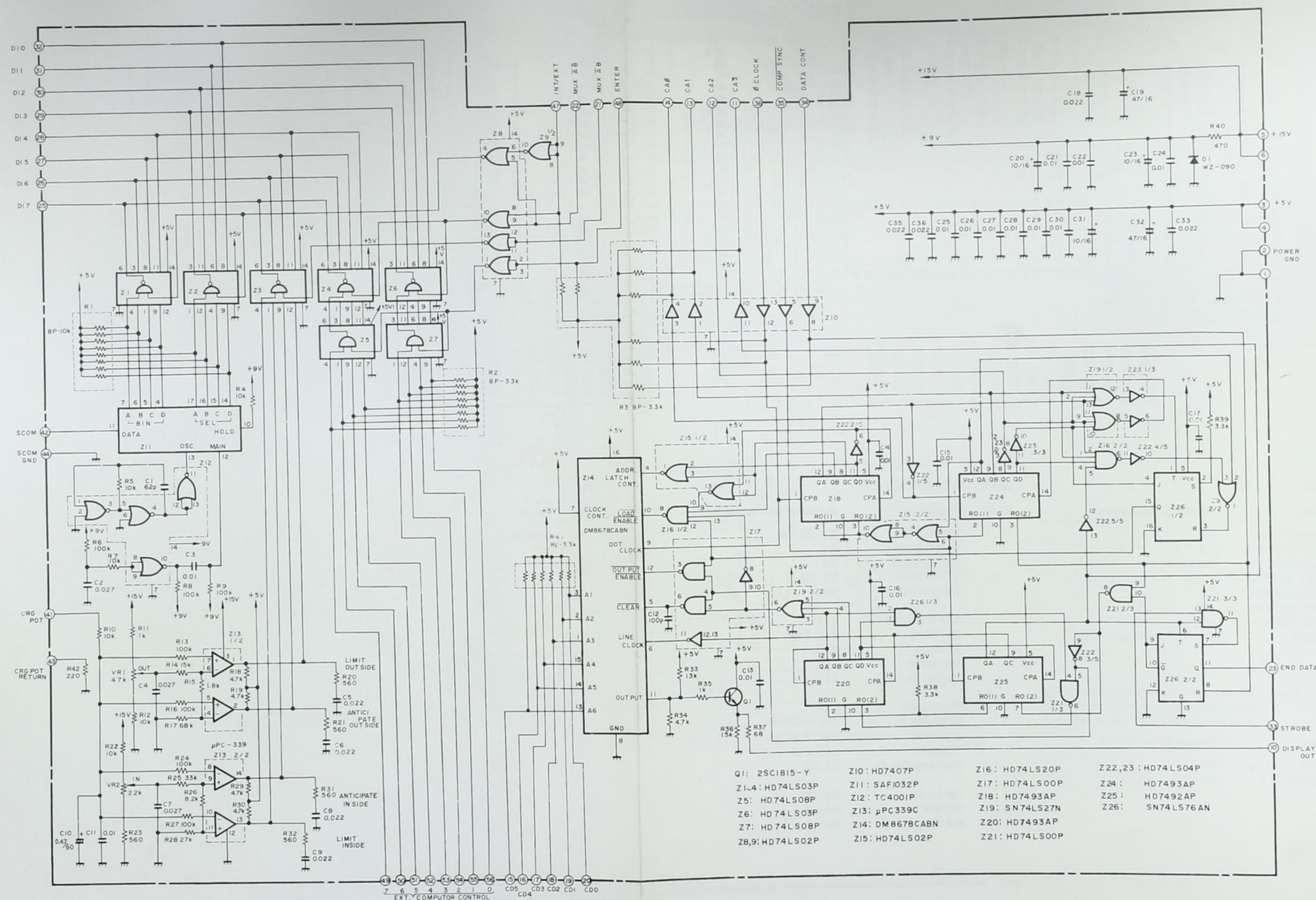
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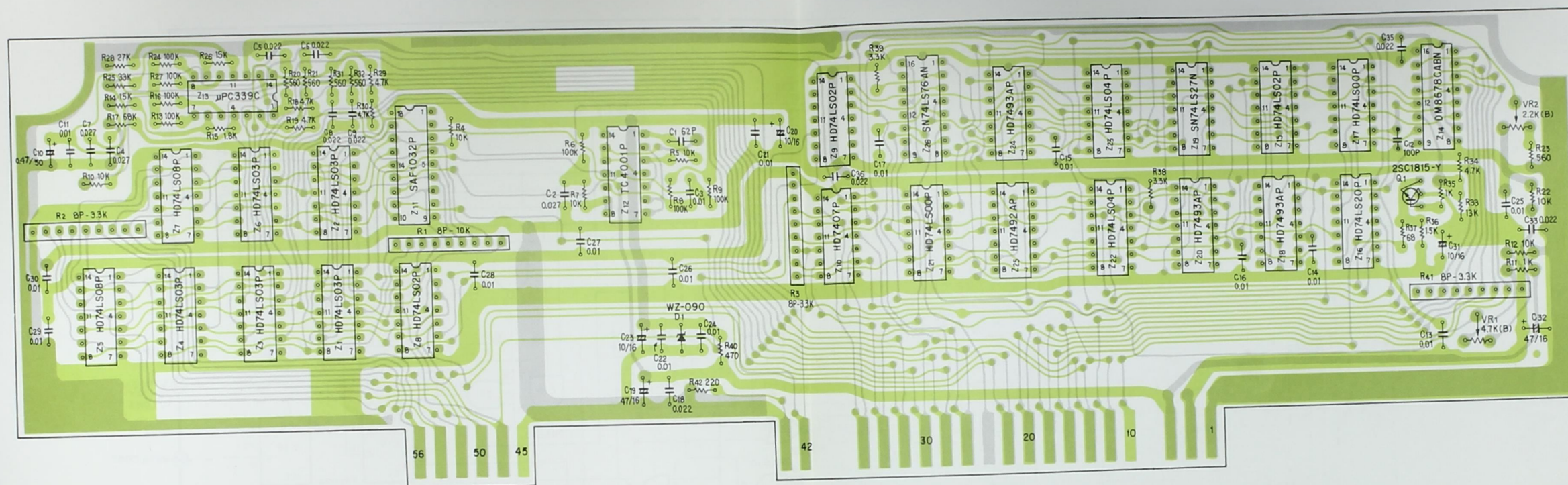
Mark	Part No.	Symbol & Description
	VKH-005	IC socket
	VTH-001	FB1—FB3





D





Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 470 P16	C19, C32
	CEA 100 P16	C20, C23, C31
	CEAR47P50	C10
	CKDYF 223Z 50	C5, C6, C8, C9, C18, C33, C35, C36
	CKDYF 103Z 50	C11, C13-C17, C21, C22, C24-C30
	CQMA 273K 50	C2, C4, C7
	CQMA 103K 50	C3
	CQSH 101J 50	C12
	CQSH 620J 50	C1

RESISTORS

Mark	Part No.	Symbol & Description
	VCN-005	R1
	VCN-006	R2, R3, R41
	VCP-006	VR1 4.7k
	VCP-005	VR2 2.2k
	RD4VS □□□J	R6-R40, R42

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	DM8678CABN	Z14
	SAF1032P	Z11
	TC4001P	Z12
	μPC339C	Z13
	HD74LS00P	Z17, Z21
	SN74LS76AN	Z26
	HD7492AP	Z25
	SN74LS27N	Z19
	HD74LS20P	Z16
	HD74LS08P	Z5, Z7
	HD7407P	Z10
	HD74LS04P	Z22, Z23
	HD74LS03P	Z1-Z4, Z6
	HD74LS02P	Z8, Z9, Z15
	HD7493AP	Z18, Z20, Z24
	(SN7493AN)	
	2SC1815-Y	Q1
	WZ-090	D1

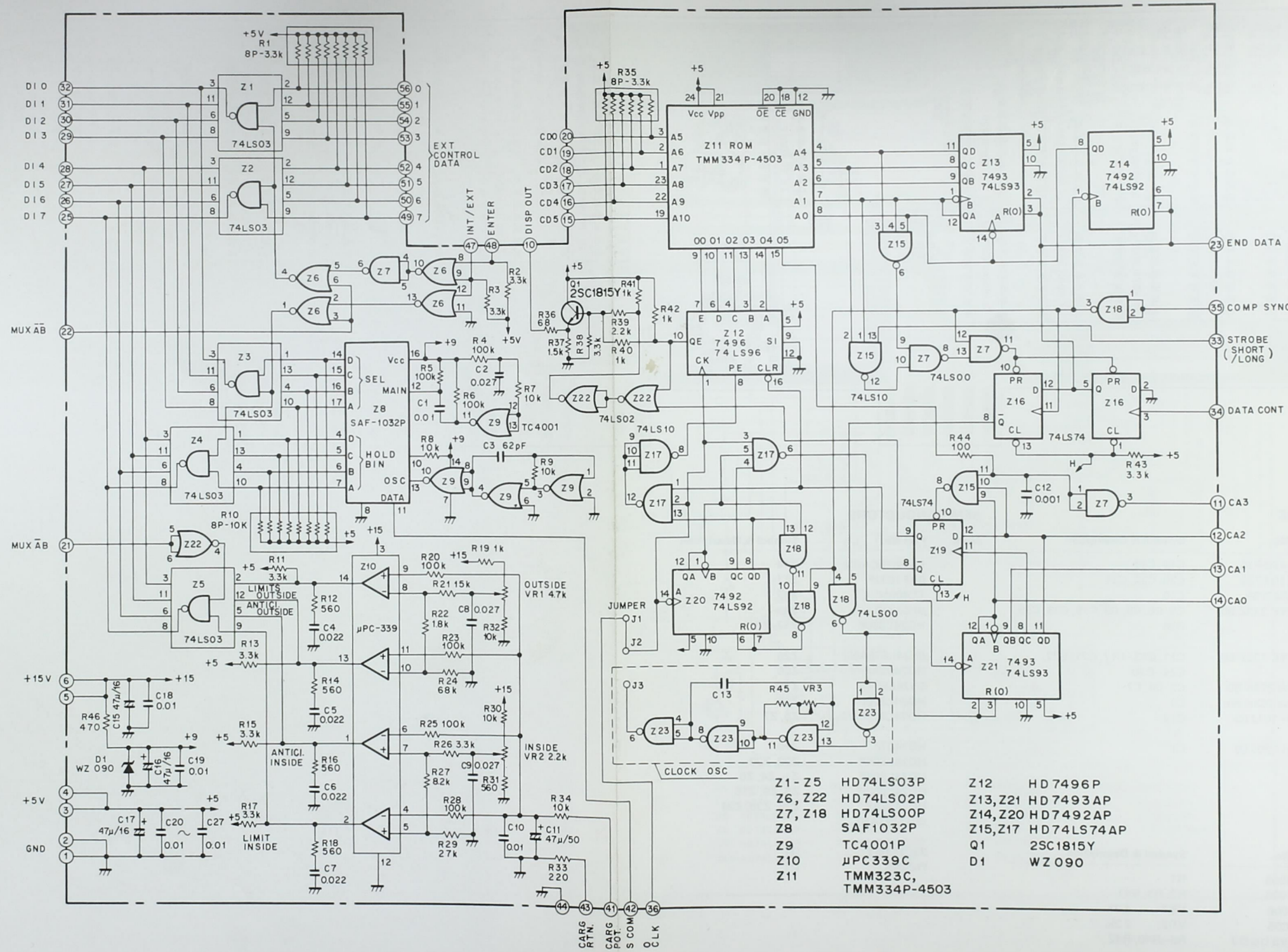
17. DSPL (VWG-014)

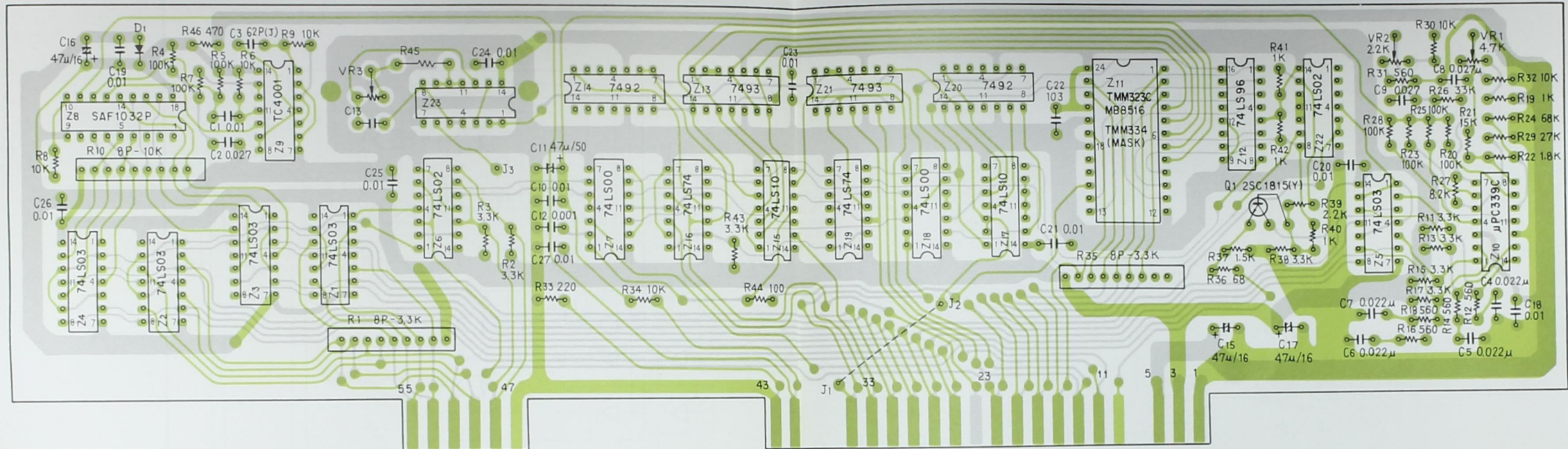
A

B

C

D





Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CQMA103K50	C1
	CQMA273K50	C2, C8, C9
	CQSH620J50	C3, C13
	CKDYF223Z50	C4-C7
	CKDYF103Z50	C10, C18-C27
	CEAR47P50	C11
	CEA470P16	C15, C16, C17
	CQMA102K50	C12

RESISTORS

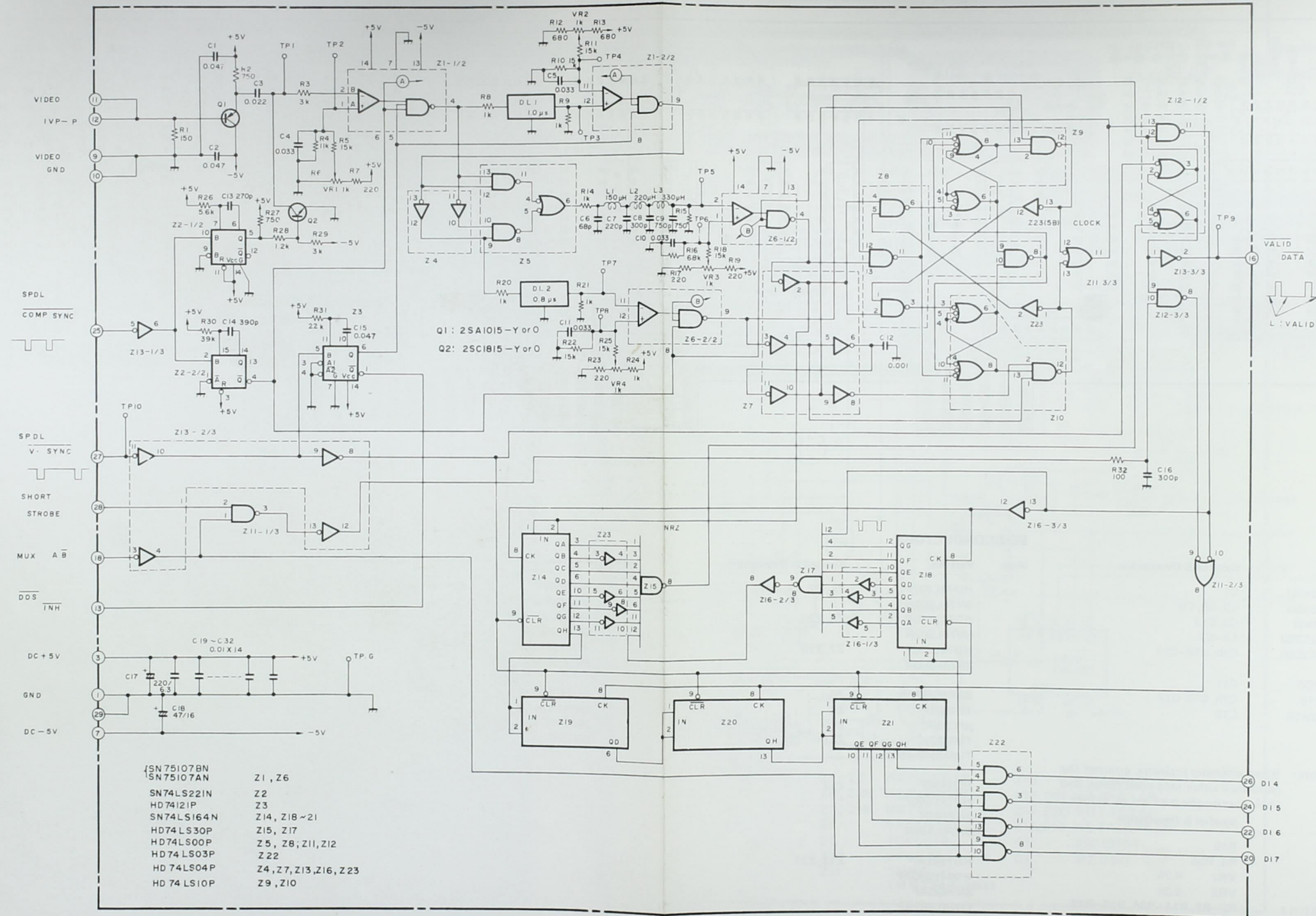
Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	VCN-005	R10
	VCN-006	R1, R35
	VCP-005	VR1 4.7k
	VCP-006	VR2 2.2k
	RD4VS□□□J	R2-R9, R11-R34, R36-R44

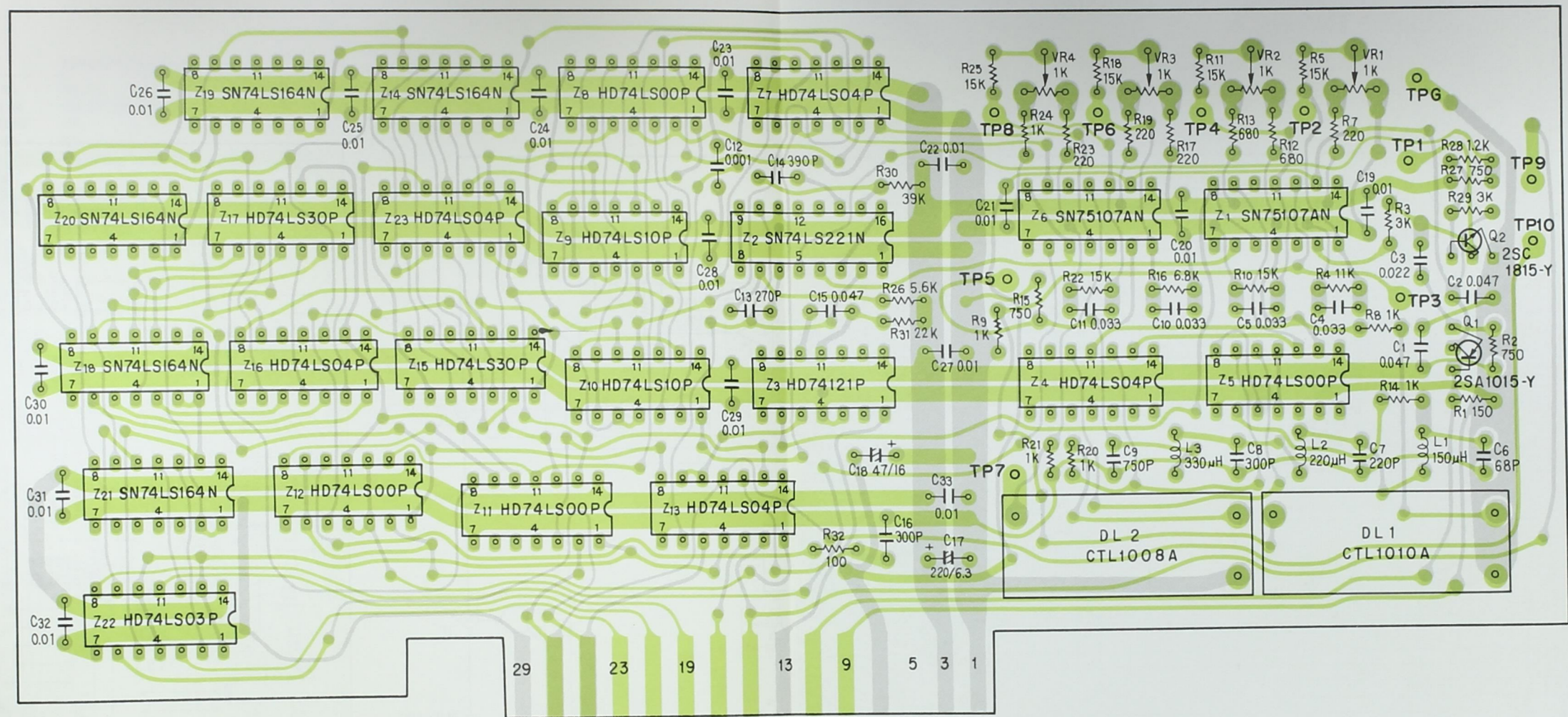
SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	HD74LS03P	Z1, Z2, Z3, Z4, Z5
	SN74LS03N	
	HD74LS02P	Z6, Z22
	SN74LS02N	
	HD74LS00P	Z7, Z18
	SN74LS00N	
	SAF1032P	Z8
	TC4001P	Z9
	μPC339C	Z10
	TMM323C	Z11
	TMM334P-4503	
	HD7496P	Z12
	HD74LS96P	
	SN7496N	
	SN74LS96N	
	HD7493AP	Z13, Z21
	HD74LS93AP	
	SN7493AP	
	SN74LS93AP	

Mark	Part No.	Symbol & Description
	HD7492AP	Z14, Z20
	HD74LS92P	
	SN7492AP	
	SN74LS92AP	
	HD74LS10P	Z15, Z17
	SN74LS10N	
	HD74LS74AP	Z16, Z19
	SN74LS74AN	
	2SC1815-Y	Q1
	WZ-090	D1



D & CR



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 470P 16	C18
	CKDYF 473Z 50	C19-C27, C2
	CKDYF 103Z 50	C28-C33
	CKDYF 333Z 50	C4, C5, C10, C11
	CQMA 223K 50	C3
	CEA 221P 6R3	C17
	CQMA 102K 50	C12
	CQSH 680J 50	C6
	CQSH 221J 50	C7
	CQSH 271J 50	C13
	CQMA 473K 50	C15
	CQSH 301J 50	C8, C16
	CQSH 391J 50	C14
	CQSH 751J 50	C9

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	VCR-004	VR1-VR4
	RN4PR □□□□F	R4, R5, R7-R26, R30
	RD4VS □□□J	R1-R3, R27-R29, R31, R32

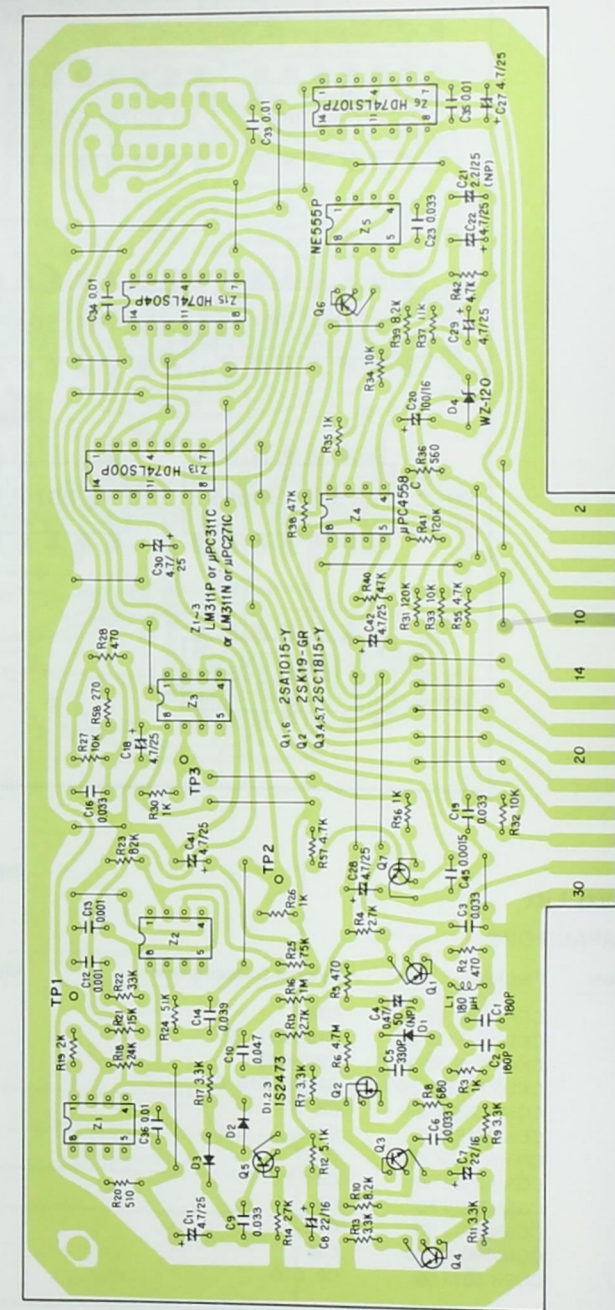
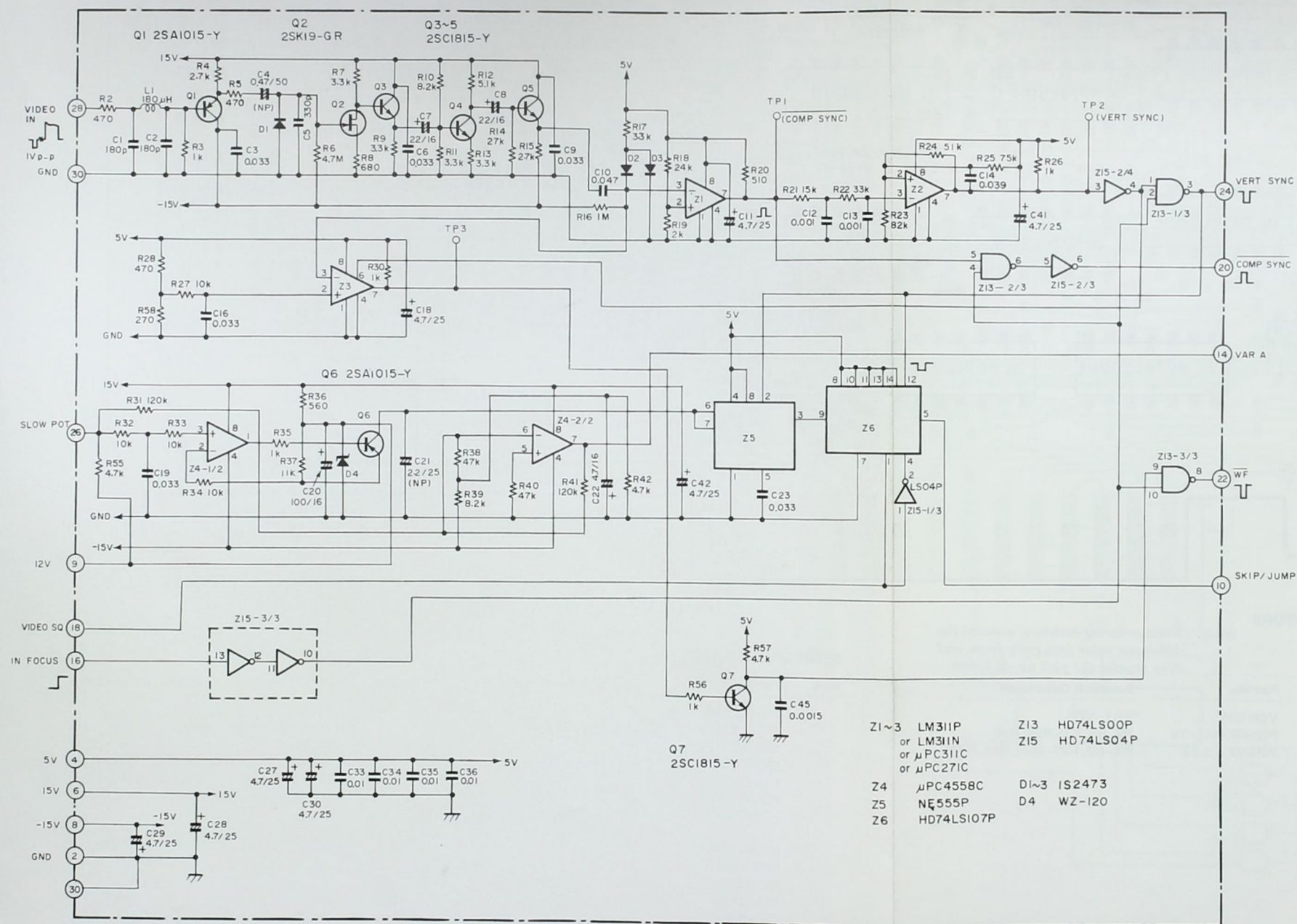
SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	SN75107AN	Z1, Z6
	SN74LS164N	Z14, Z18-Z21
	SN74LS221N	Z2
	SN74221N	
	HD74221P	
	HD74LS00P	Z5, Z8, Z11, Z12
	HD74LS04P	Z4, Z7, Z13, Z16, Z23
	HD74LS10P	Z9, Z10
	HD74LS30P	Z15, Z17
	HD74LS03P	Z22
	2SA1015-Y or O	Q1
	2SC1815-Y	Q2
	HD74121P	Z3
	SN74121N	

COILS, TRANSFORMERS

Mark	Part No.	Symbol & Description
	VTL-037	L1
	VTL-039	L2
	VTL-041	L3
	VTF-001	DL1 Delay line
	VTF-002	DL2 Delay line

19. STPM (VWG-010)



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CCDSL 181J 50	C1, C2
	CKDYF 333Z 50	C3, C6, C9, C16, C19, C23
	CEAR 47M 50 NP	C4
	CCDSL 331J 50	C5
	CEA 220P 16	C7, C8
	CQMA 473K 50	C10
	CEA 4R7P 25	C11, C18, C22, C27-C30, C41, C42
	CQMA 102K 50	C12, C13
	CQMA 393K 50	C14
	CEA 101P 16	C20
	CEA2R2M 25 NP	C21
	CKDYB 103K 50	C33-C36
	CQMA 152K 50	C45

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD4VS □□□J	R2-R28, R30-R42, R55-R58

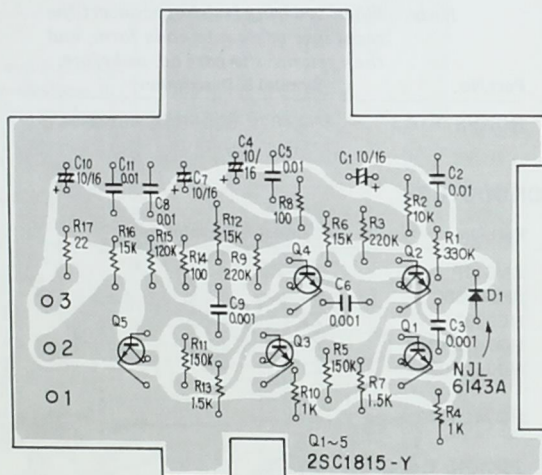
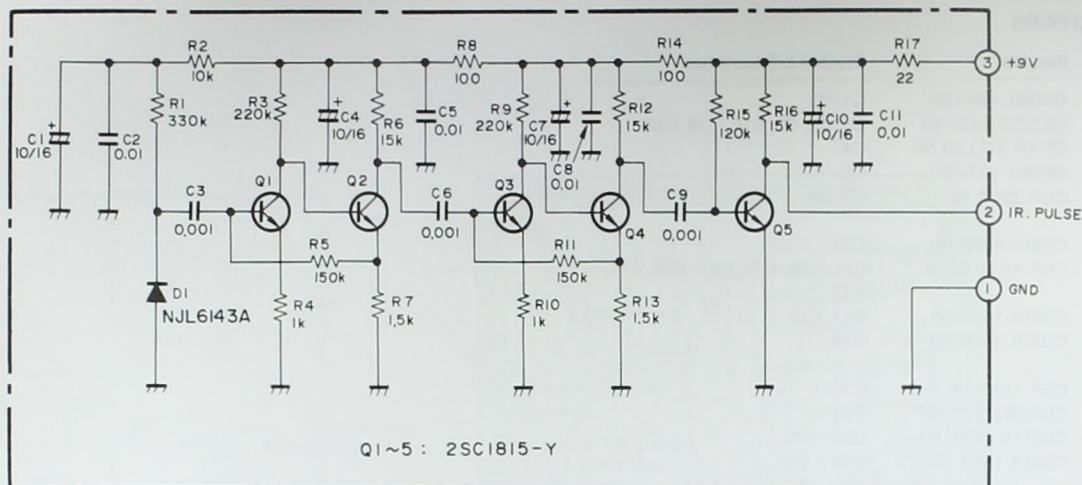
SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	LM311P	Z1-Z3
	μPC4558C	Z4
	NE555P	Z5
	HD74LS107P	Z6
	HD74LS00P	Z13
	HD74LS04P	Z15
	2SA1015-Y or O	Q1, Q6
	2SK19TM-GR	Q2
	2SC1815-Y	Q3-Q5, Q7
	1S2473	D1-D3
	WZ-120	D4

OTHERS

Mark	Part No.	Symbol & Description
	VTL-038	L1

20. MIRB (VWG-005)



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CEA 100P 16	C1, C4, C7, C10
	CKDYF 103Z 50	C2, C5, C8, C11
	CQMA 102K 50	C3, C6, C9

RESISTORS

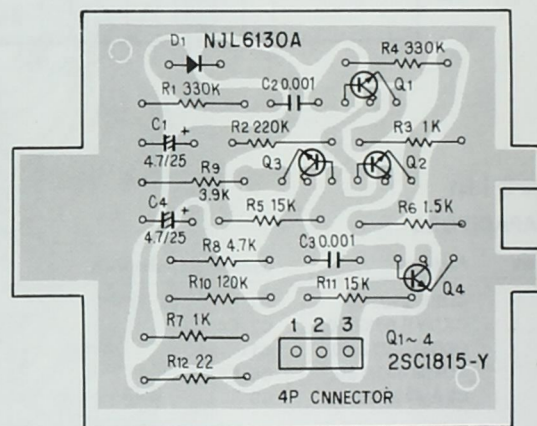
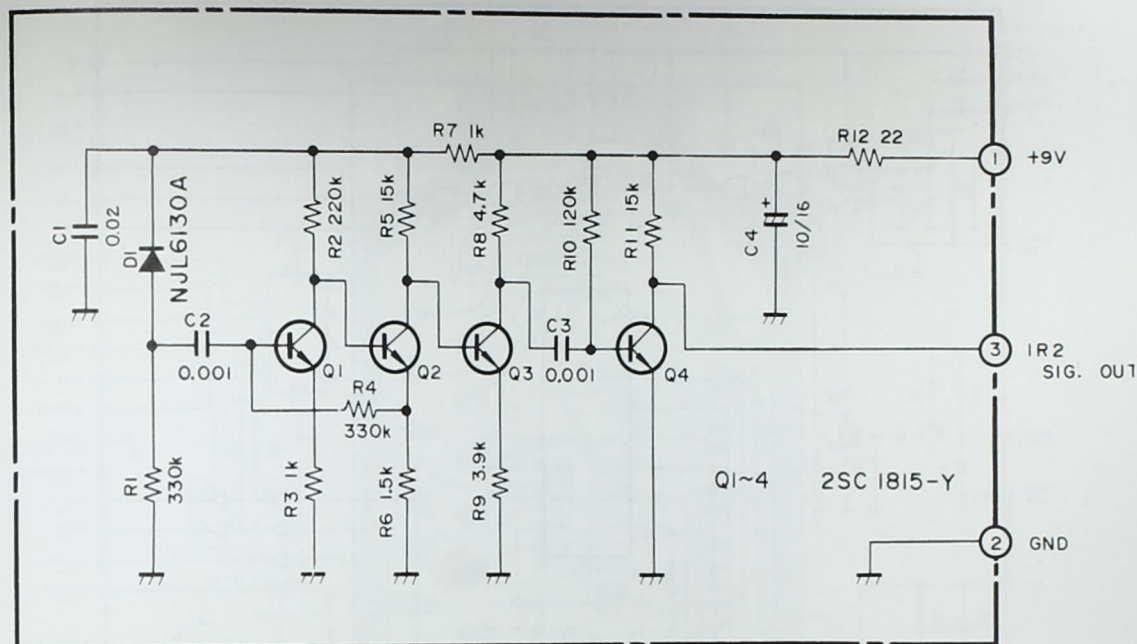
Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD4VS □□□J	R1-R17

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	2SC1815-Y	Q1-Q5
	NJL6143A	D1

21. SIRB (VWG-006)



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CKDYF 103Z 50	C1
	CKDYB 102K 50	C2, C3
	CEA 100P 16	C4

RESISTORS

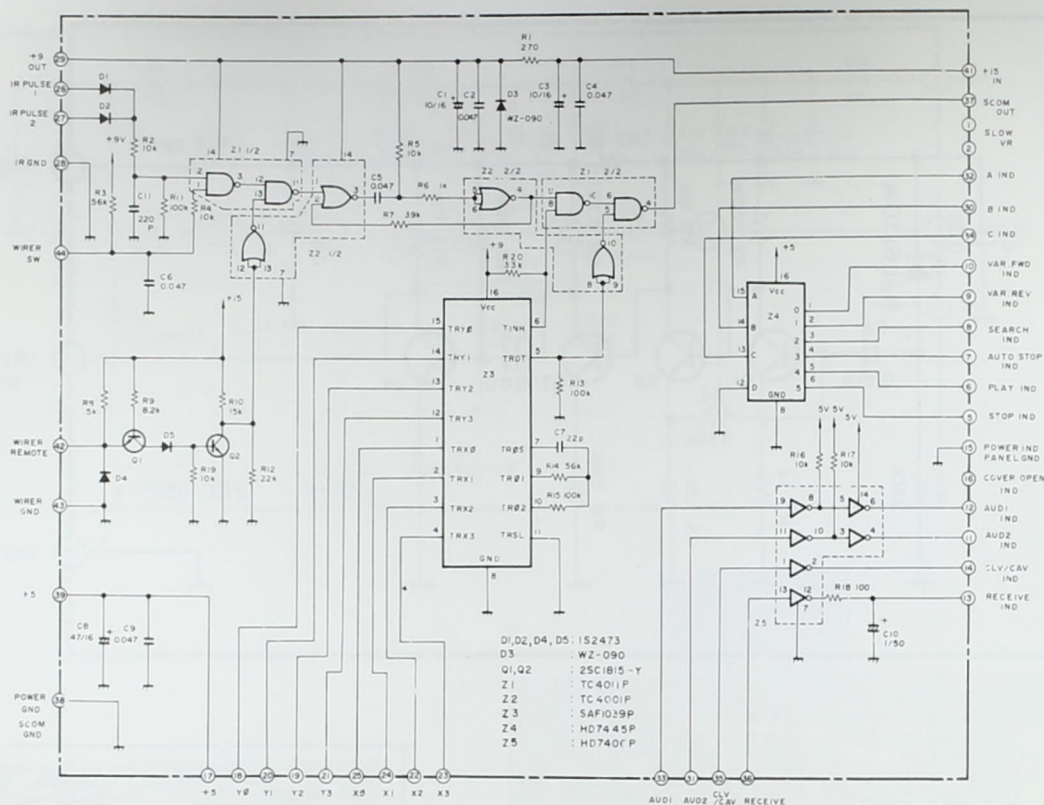
Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
	RD4PS □□□ J	R1-R12

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	2SC1815-Y	Q1-Q4
	NJL6130A	D1

22. LMPD (VWG-007)



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CQSH 220J 50	C7
	CKDYF 473Z 50	C2, C4, C9
	CCDSL 221Z 50	C11
	CQMA 473K 50	C5, C6
	CEA 470P 16	C8
	CEA 100P 16	C1, C3
	CEA 010P 50	C10

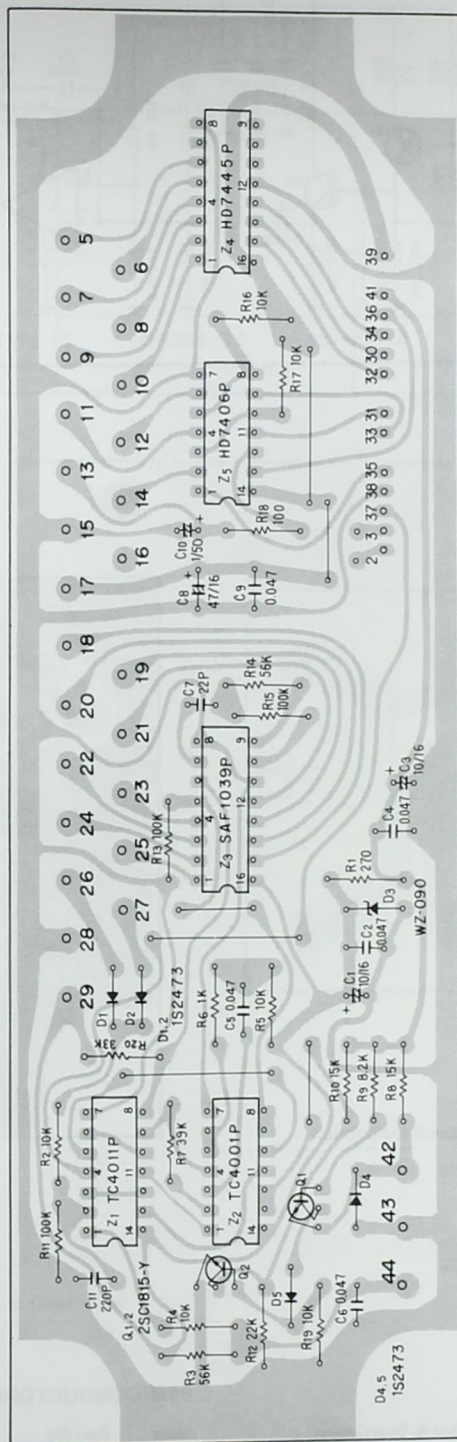
RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

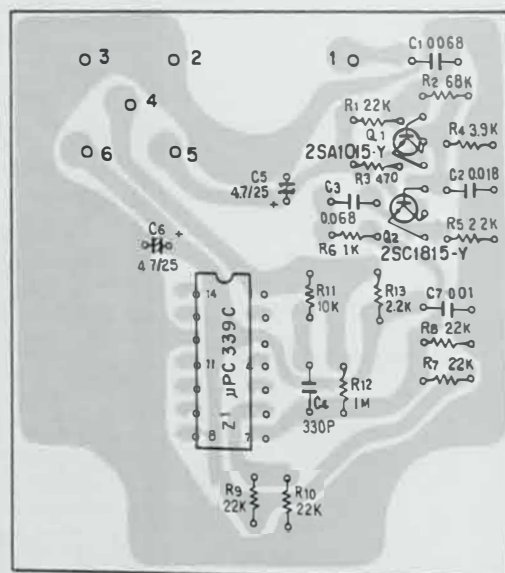
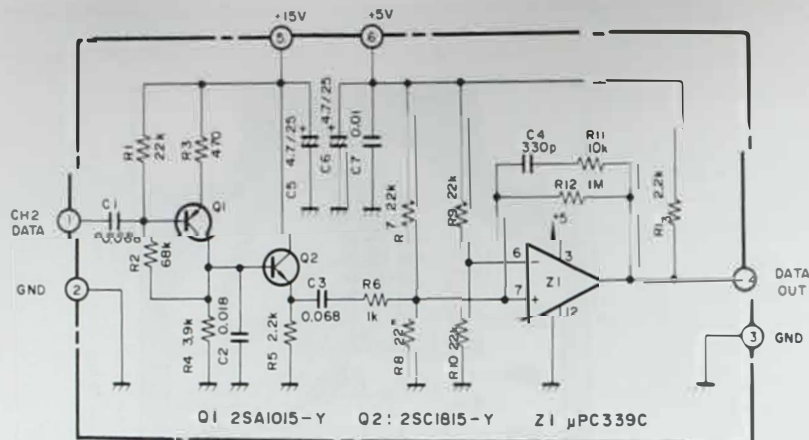
Mark	Part No.	Symbol & Description
	RD4PS □□□J	R1-R8, R9-R13, R15-R20
	RN4PR □□□□F	R14

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	TC4011P	Z1
	TC4001P	Z2
	SAF1039P	Z3
	HD7445P	Z4
	HD7406P	Z5
	SN7406N	
	2SC1815-Y	Q1, Q2
	1S2473	D1, D2, D4, D5
	WZ-090	D3



23. DADT (VWG-008)



Parts List

CAPACITORS

Mark	Part No.	Symbol & Description
	CQMA 683K 50	C1, C3
	CQMA 183K 50	C2
	CKDYF 103Z 50	C7
	CCDYF 331Z 50	C4
	CEA 4R7P 25	C5, C6

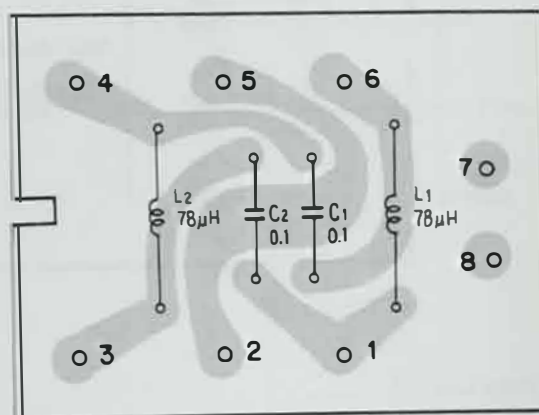
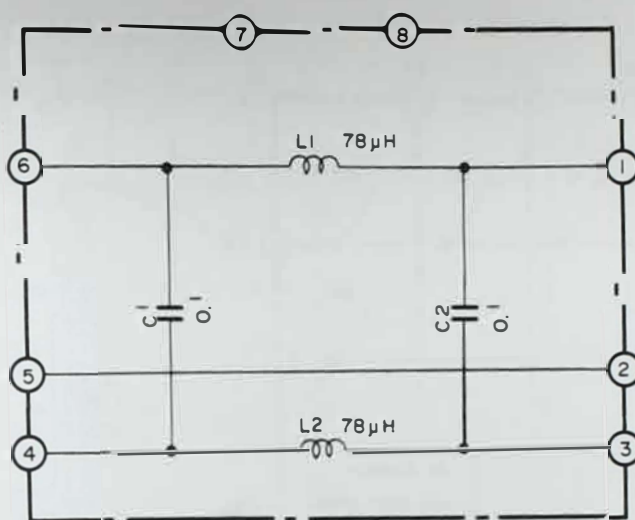
RESISTORS

Mark	Part No.	Symbol & Description
	RD4VS000J	R1-R13

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	μPC339C	Z1
	2SA1015-Y	Q1
	2SC1815-Y or O	Q2

24. NFPB (VWY-003)



Parts List

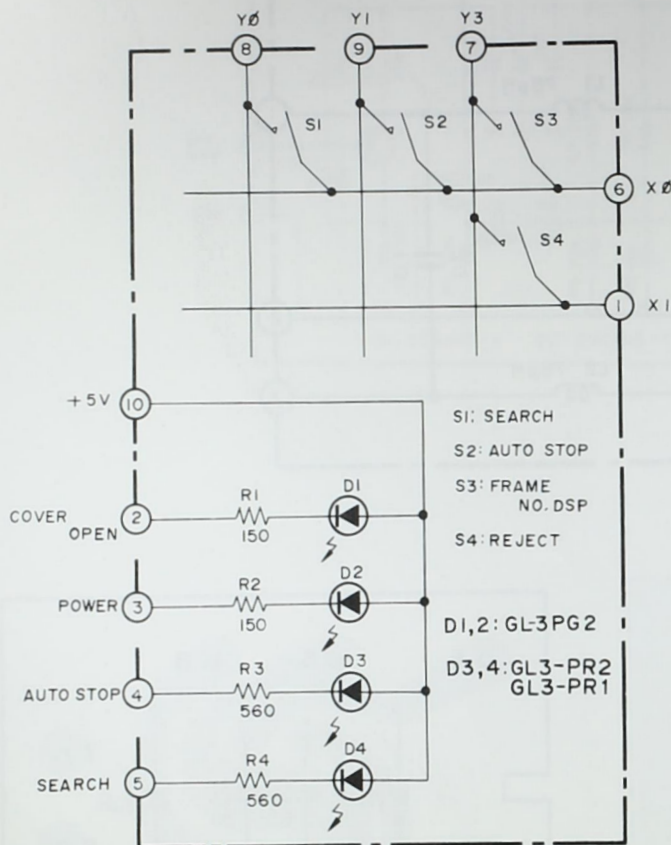
CAPACITORS

Mark	Part No.	Symbol & Description
	CKDYF 104Z 50	C1, C2

COILS, TRANSFORMERS

Mark	Part No.	Symbol & Description
	VTF-008	L1, L2

25. LMP1 (VWY-004)



Parts List

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

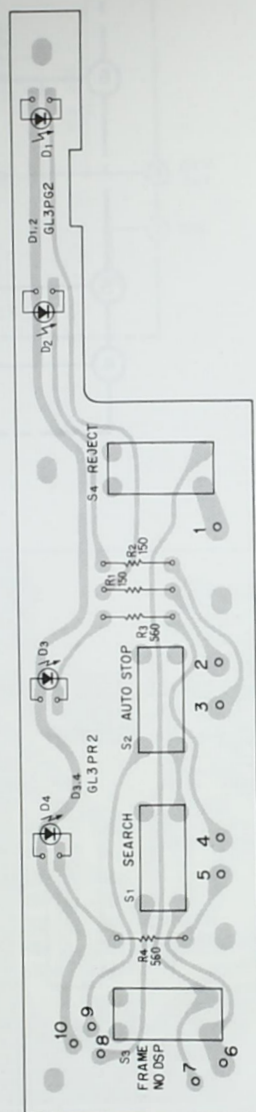
Mark	Part No.	Symbol & Description
	RD%PS □□□J	R1-R4

SEMICONDUCTORS

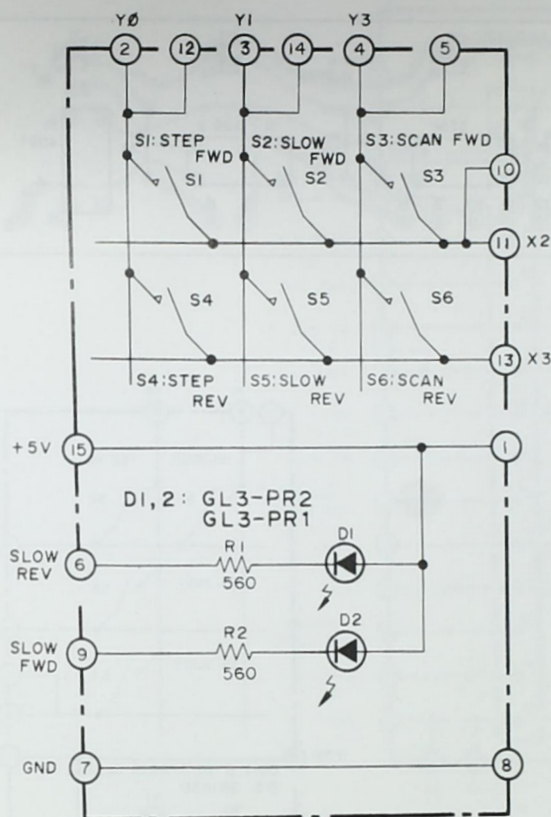
Mark	Part No.	Symbol & Description
	GL-3PG2	D1, D2
	GL-3PR1	D3, D4
	GL-3PR2	

SWITCH

Mark	Part No.	Symbol & Description
	VSG-001	S1-S4



26. LMP2 (VWY-005)



Parts List

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

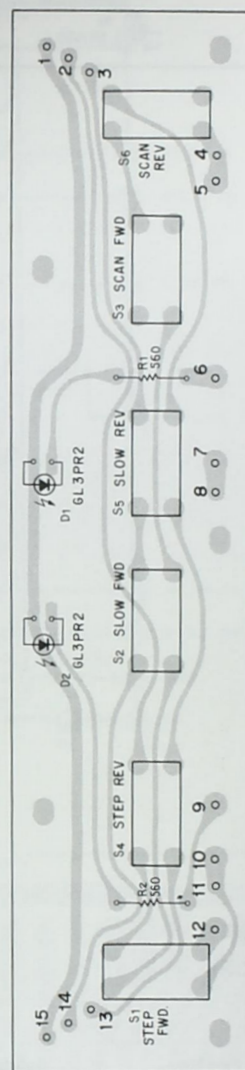
Mark	Part No.	Symbol & Description
	RD4PS □□□J	R1, R2

SEMICONDUCTORS

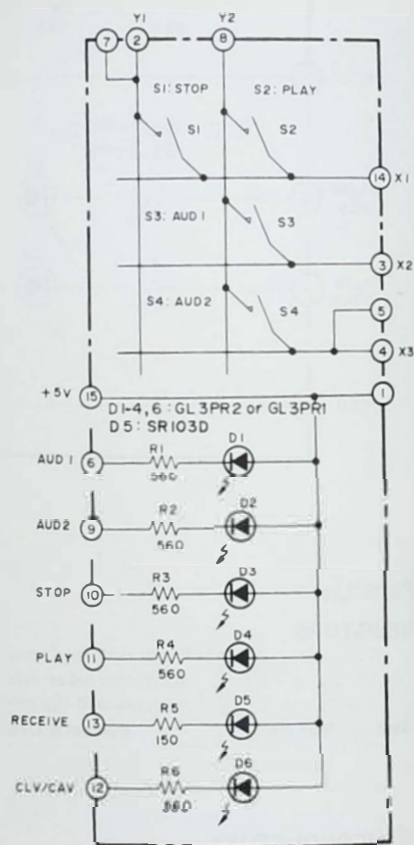
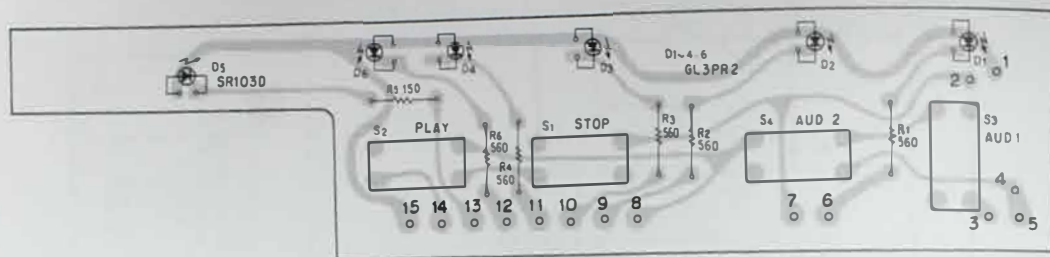
Mark	Part No.	Symbol & Description
	GL-3PR1	D1, D2
	GL-3PR2	

SWITCH

Mark	Part No.	Symbol & Description
	VSG-001	S1-S6



27. LMP3 (VWY-006)



Parts List

RESISTORS

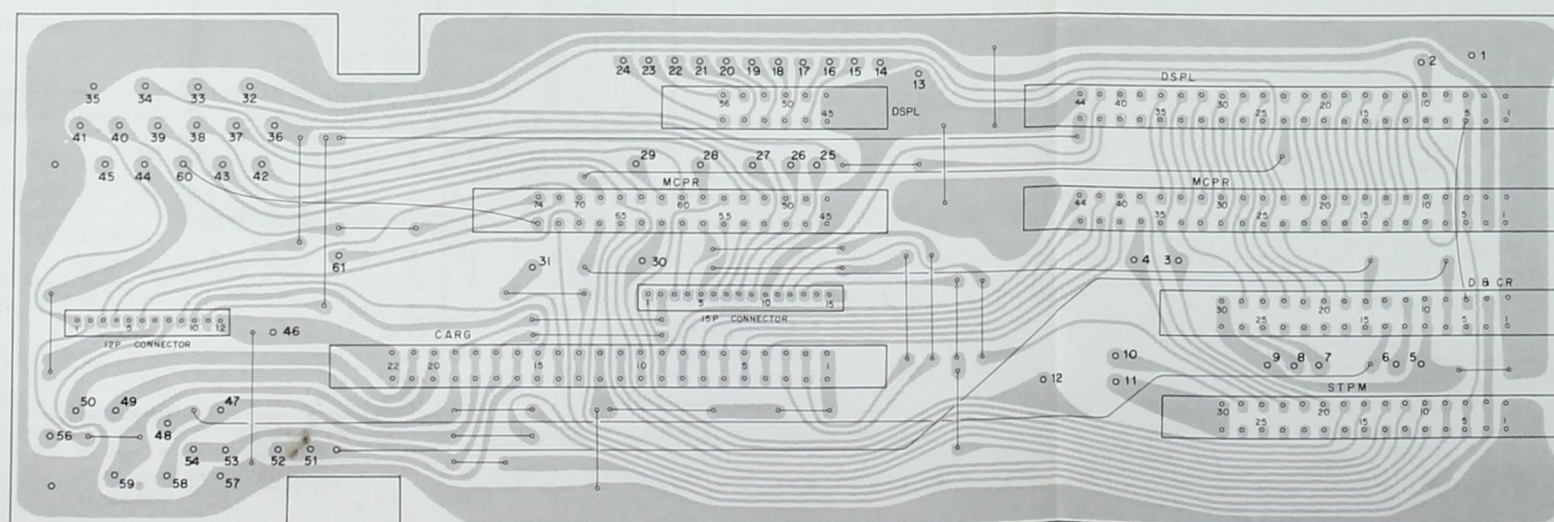
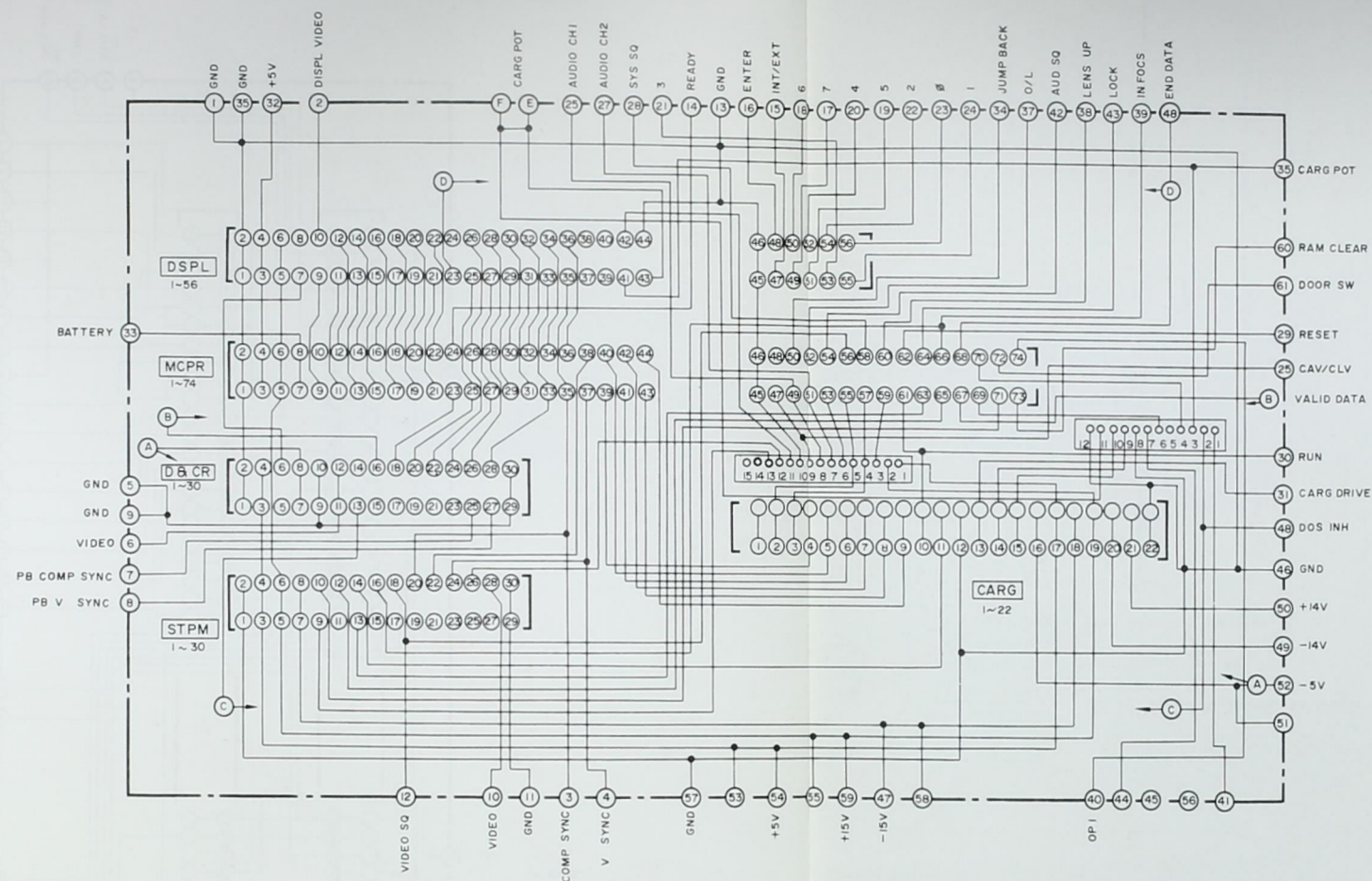
Mark	Part No.	Symbol & Description
	RD4PS □□□J	R1-R6

SEMICONDUCTORS

Mark	Part No.	Symbol & Description
	GL-3PR1	D1-D4, D6
	GL-3PR2	
	SR103D	D5

SWITCH

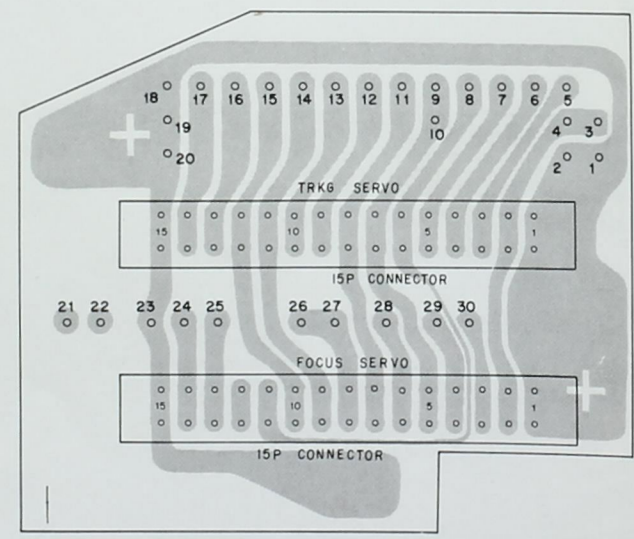
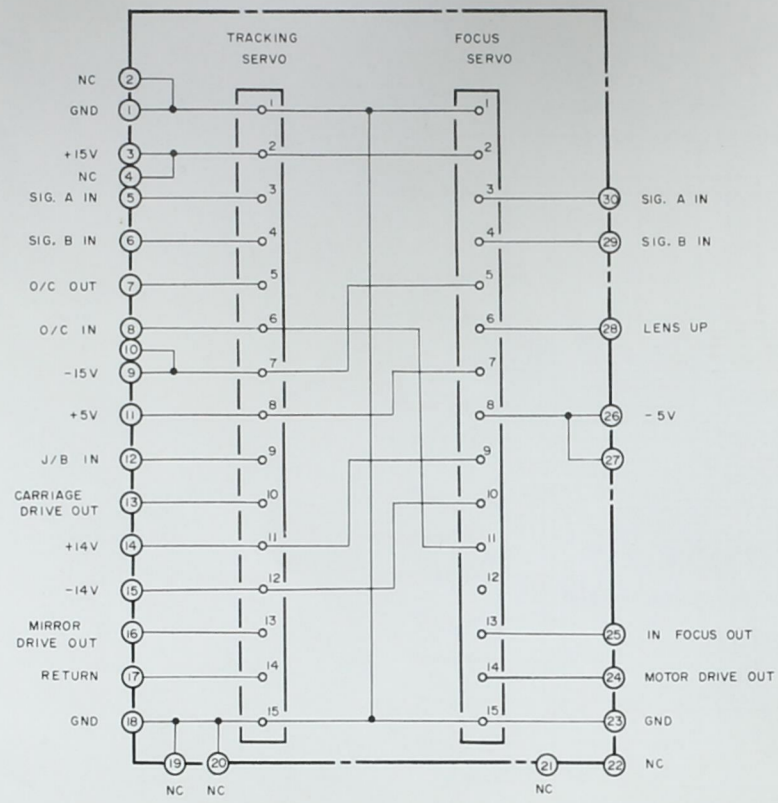
Mark	Part No.	Symbol & Description
	VSG-001	S1-S4



Parts List OTHERS

Mark	Part No.	Symbol & Description
	VKD-001	PC board connector 15P
	VKD-002	PC board connector 22P
	VKD-003	PC board connector 6P
	VKN-017	12P top post
	VKN-018	15P top post

29. FTMB (VWX-002)

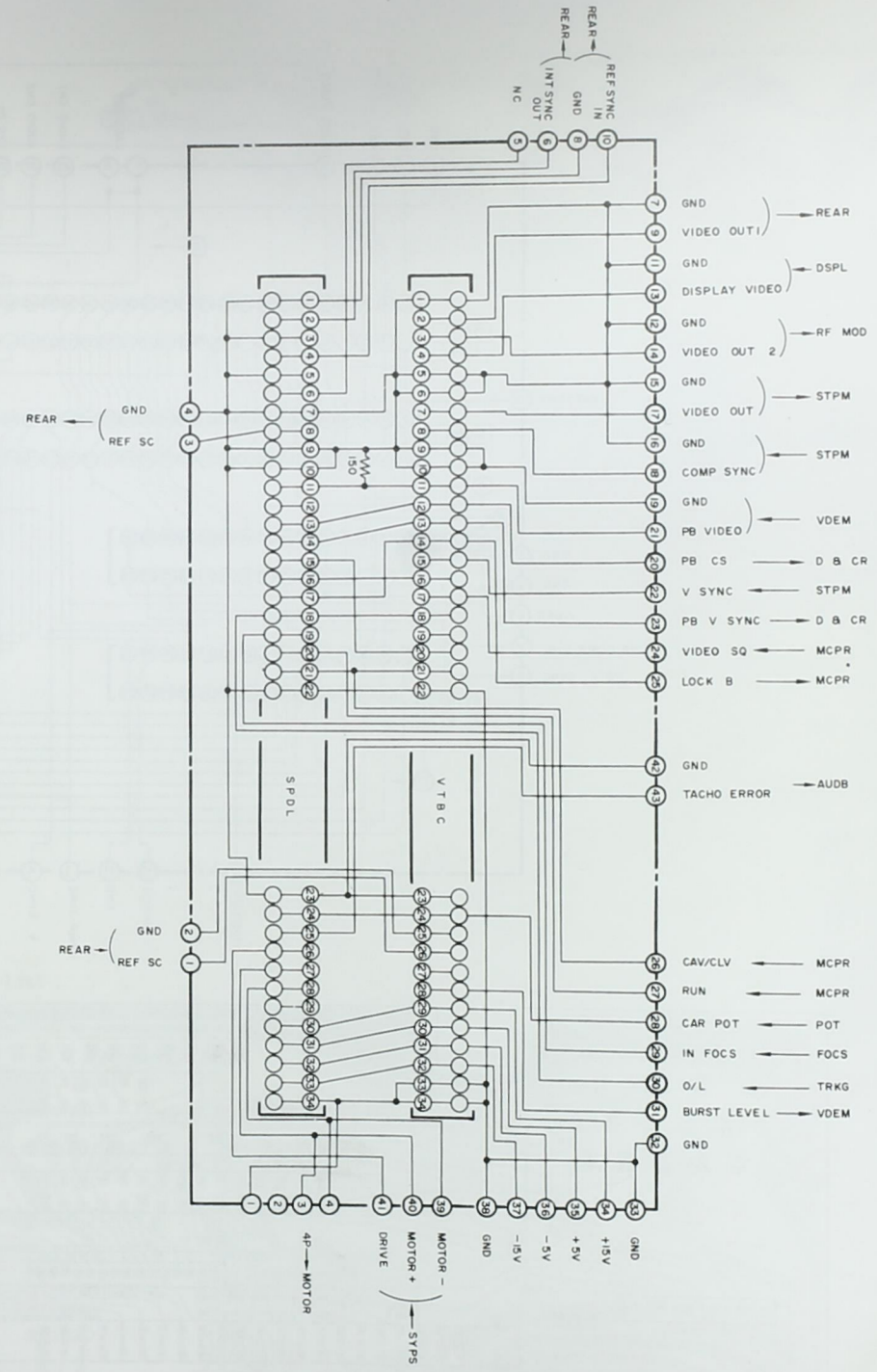


Parts List

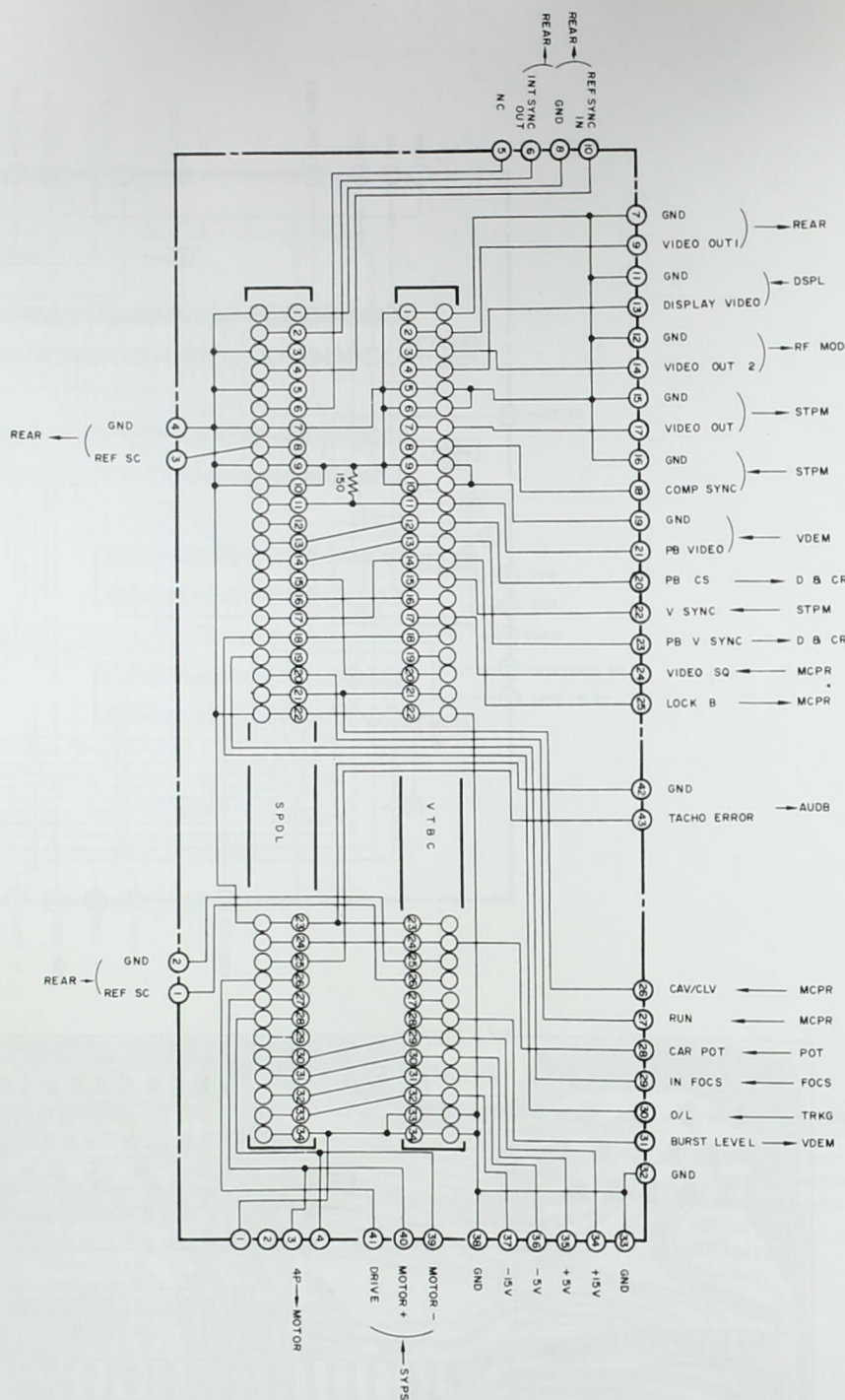
OTHERS

Mark	Part No.	Symbol & Description
	VKD-001	PC board connector 15P

30. CLMB (VWX-003)



30. CLMB (VWX-003)



CLMB

Parts List

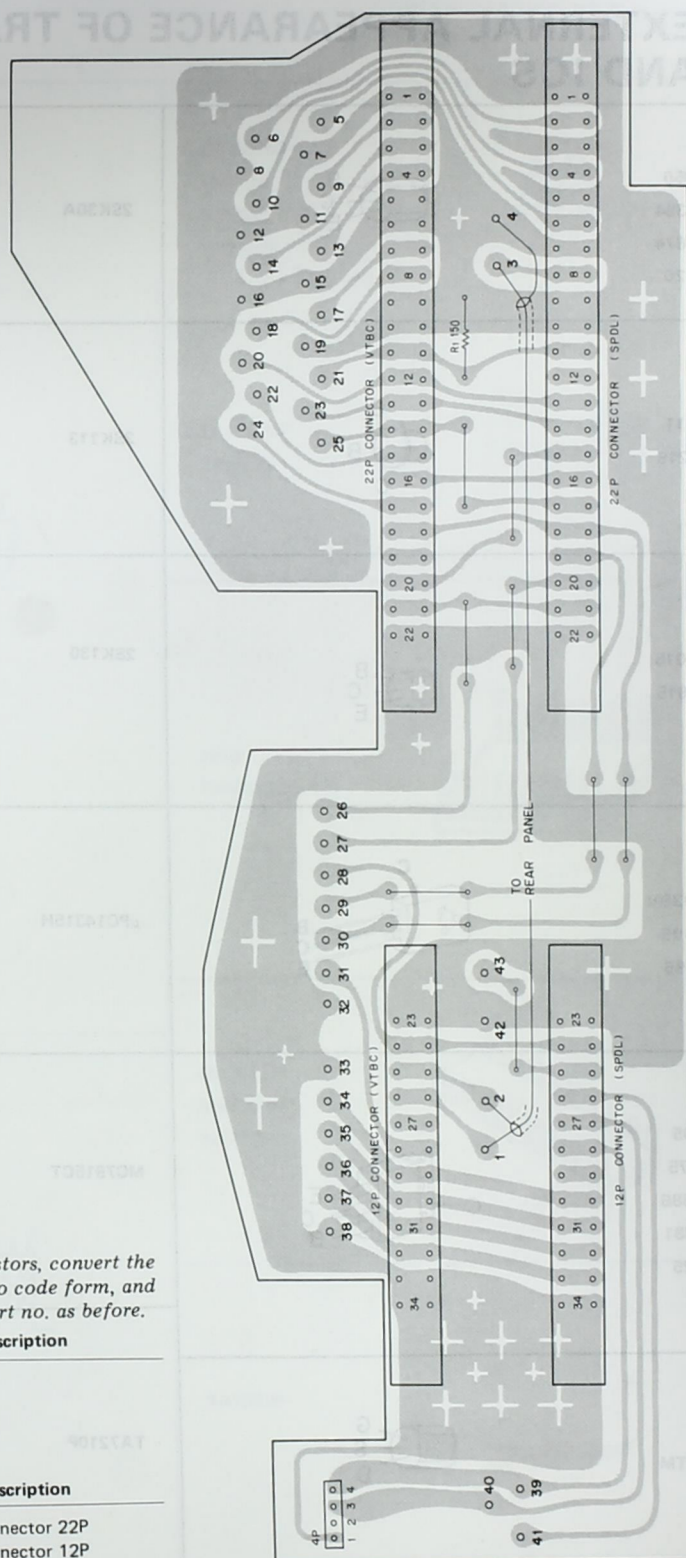
RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

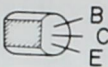
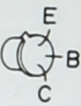
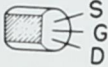
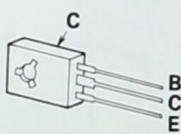
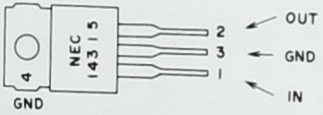
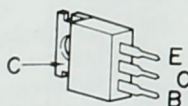
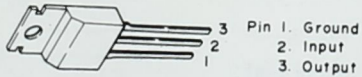
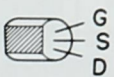
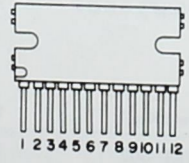
Mark	Part No.	Symbol & Description
	RD4PS □□□J	R1

OTHERS

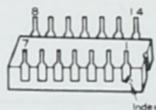
Mark	Part No.	Symbol & Description
	VKD-002	PC board connector 22P
	VKD-004	PC board connector 12P
	VKN-016	4P top post



5. EXTERNAL APPEARANCE OF TRANSISTORS, FETS AND ICS

2SA950 2SC1384 2SC1674 2SA720		2SK30A	
2SA711 2SC1216		2SK113	
2SA1015 2SC1815		2SK130	
2SA939V 2SA505 2SC495		μ PC14315H	
2SB595 2SB 675 2SA968B 2SC1881 2SD525		MC7915CT	
2SK19TM		TA7210P	

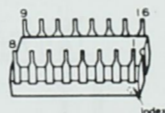
μPC339C
 HD7490AP
 HD7406P
 HD7407P
 HD7492AP
 HD7493AP
 HD75107AP
 HD74121P
 HD74LS00P
 HD74LS02P
 HD74LS03P
 HD74LS04P
 HD74LS08P
 HD74LS10P
 HD74LS20P
 HD74LS20P
 HD74LS30P
 HD74LS107P



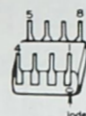
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 SN74S00N
 SN74S04N
 SN74LS27N
 SN74LS164N

TC4001BP
 TC4011BP
 TC4016BP

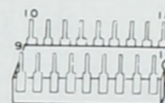
HA1137P
 HD7445P
 HD74123P
 HD74LS139P
 SN74LS193N
 SN7489N
 SN74LS76N
 SN74LS123N
 SN74LS157N
 SN74LS221N
 DM8678CABN
 TC5508P
 CCD321A-3
 SAF1039P



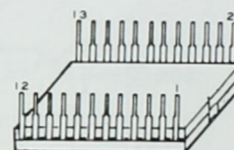
μPC4558C
 LM311P
 NE555P
 TL081CP



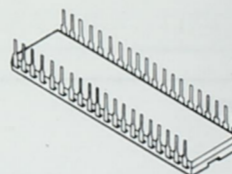
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 TC5514P



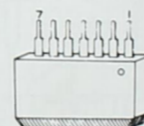
2716
 TMM323C



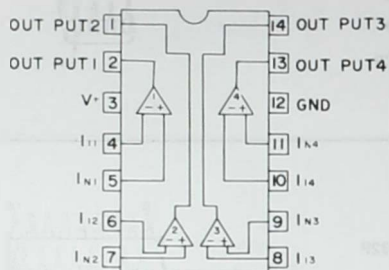
MK3850N
 MK3853N
 MK90005N



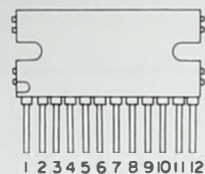
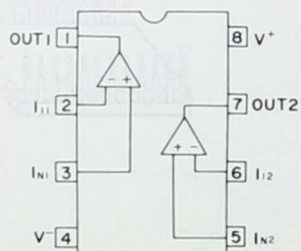
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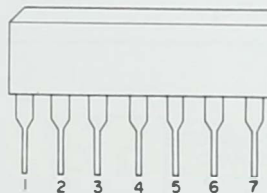
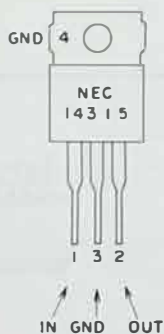
6. TERMINAL ASSIGNMENTS

 μ PC339C

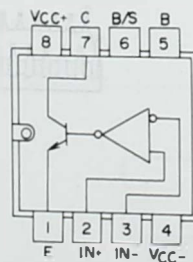
TA7210P

 μ PC4558C

TA7302P

 μ PC14315H

LM311P

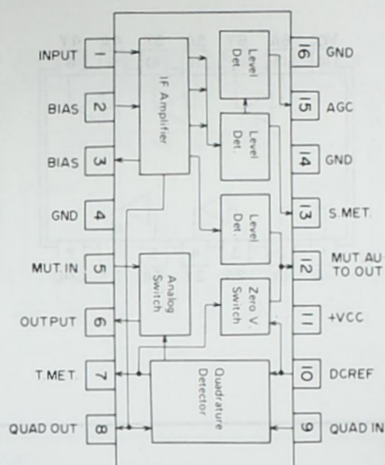


MC7915CT

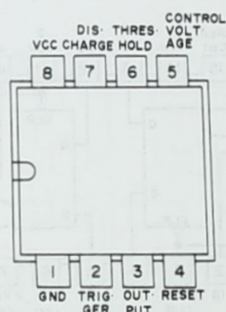


Pin 1. Ground
2. Input
3. Output

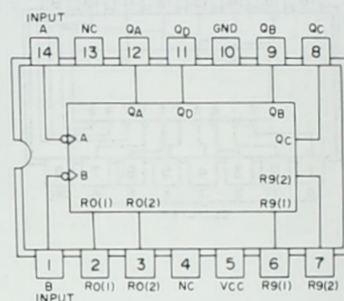
HA1137P



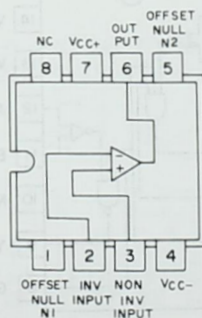
NE555P



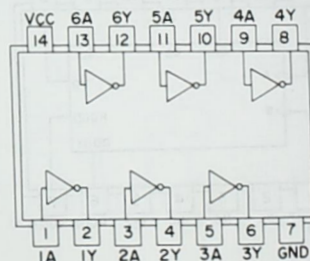
HD7490AP



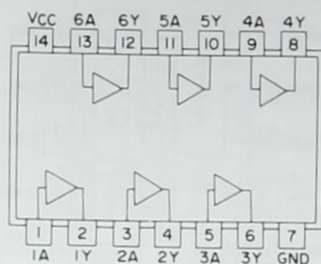
TL081CP



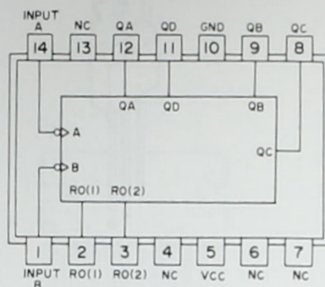
HD7406P
HD74LS04P
SN74S04N



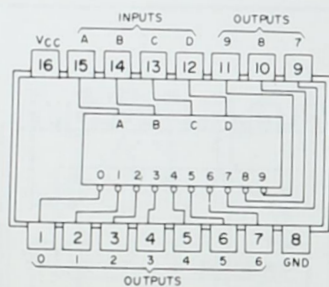
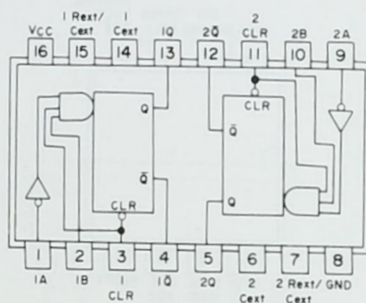
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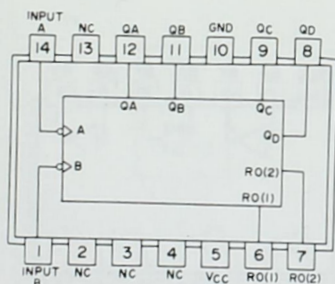
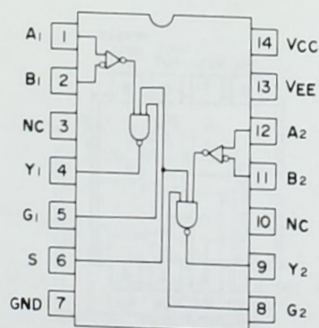
HD7493AP



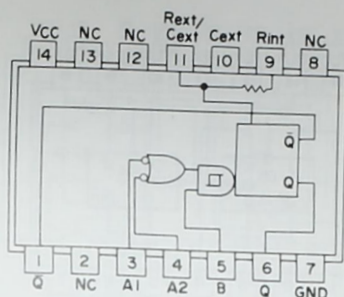
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HD74123P
SN74LS123N

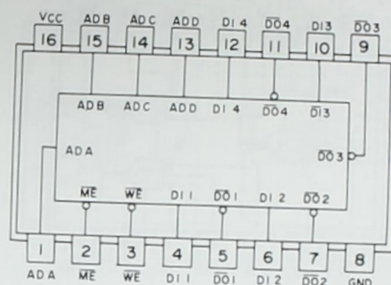
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HD75107AP
SN75107AN

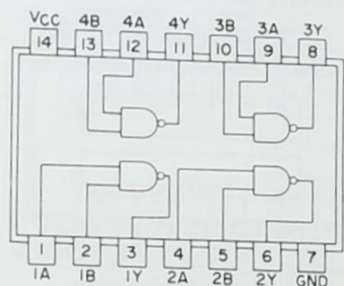
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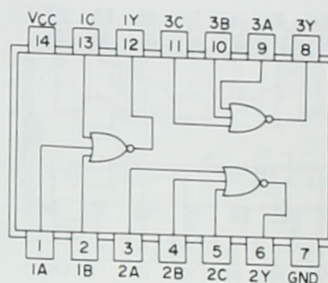
SN7489N



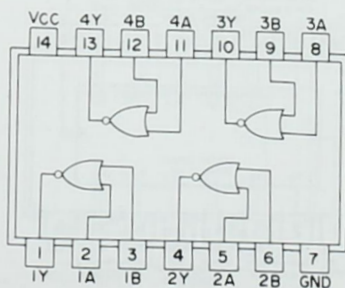
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HD74LS03P
SN74S00N



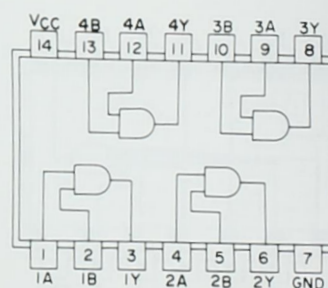
SN74LS27N



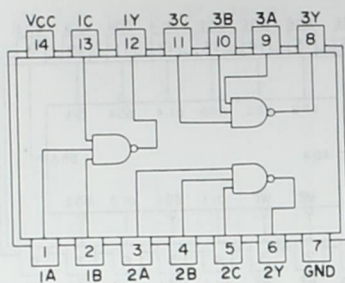
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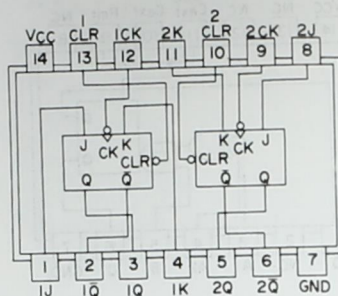
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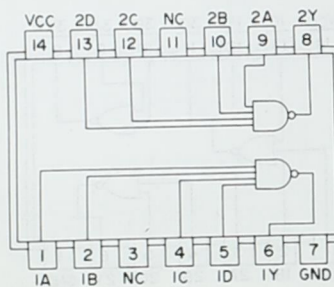
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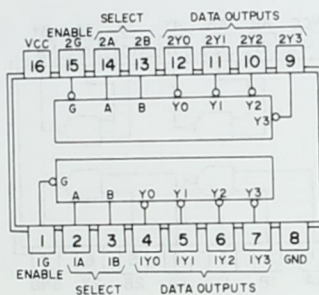
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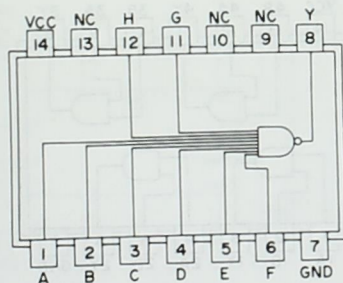
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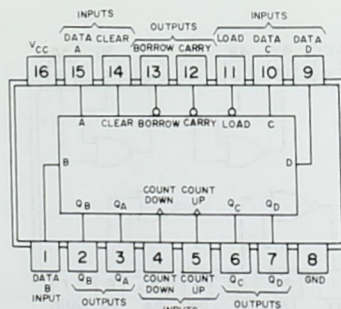
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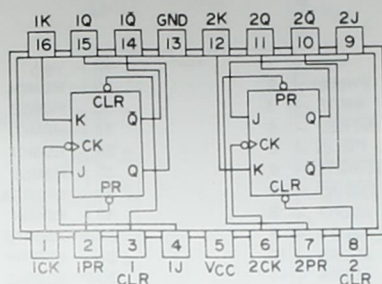
HD74LS30P



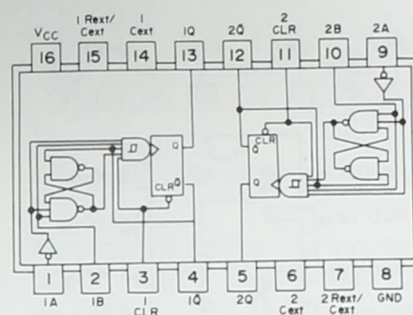
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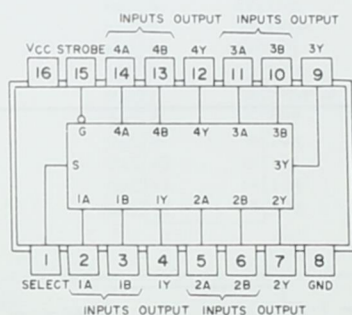
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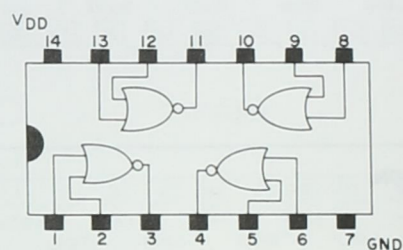
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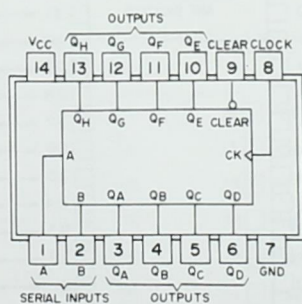
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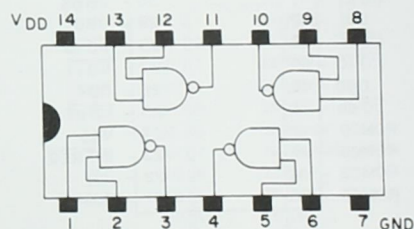
TC4001BP



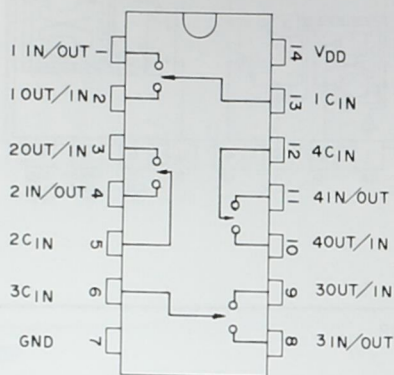
SN74LS164N



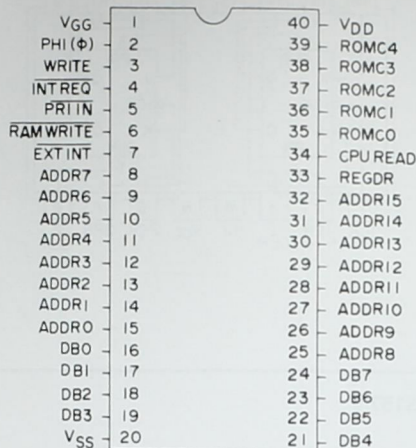
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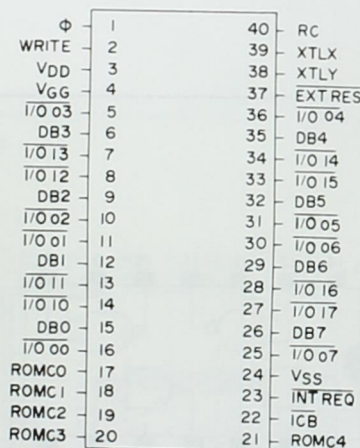
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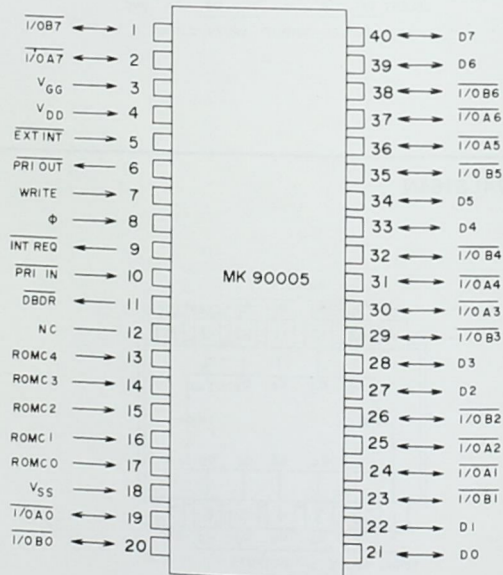
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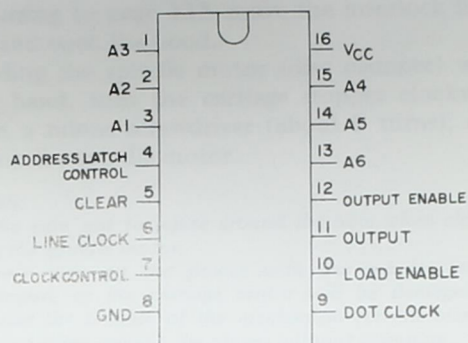
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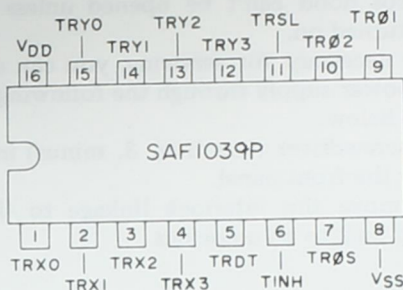
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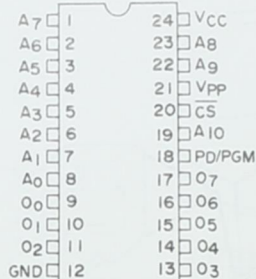
DM8678CABN



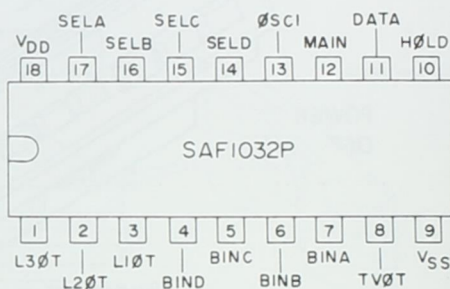
SAF1039P



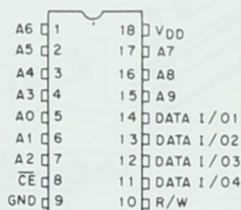
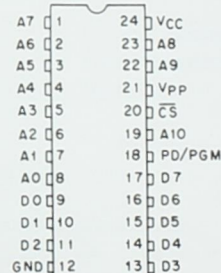
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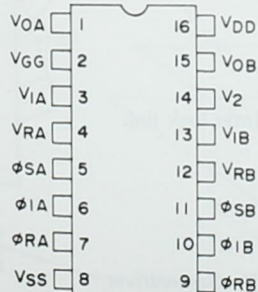
SAF1032P



TC5514P

TMM323C
TMM334P-4503

SL67960



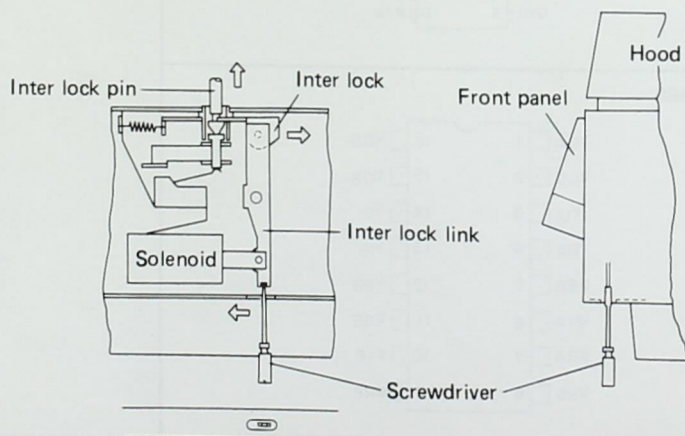
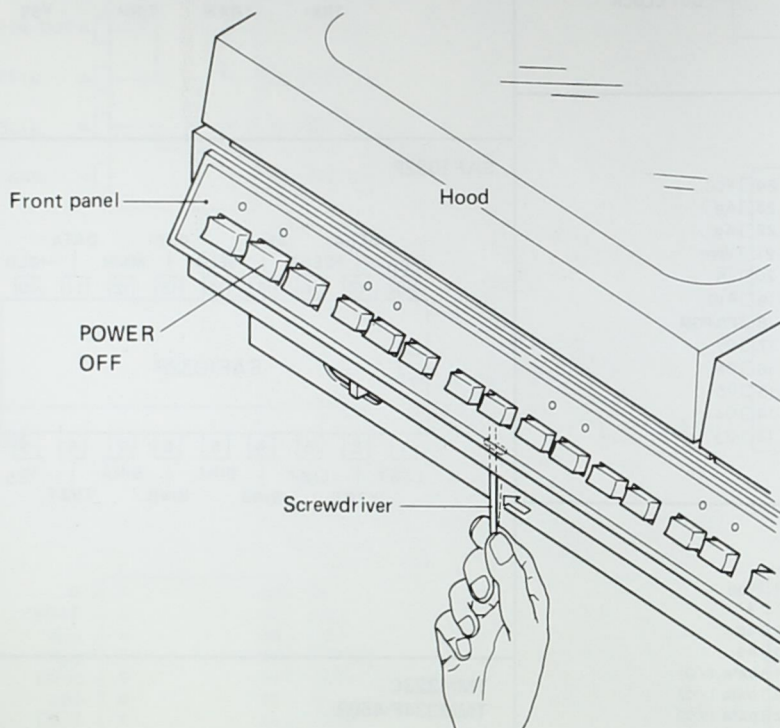
7. HOW TO OPEN THE HOOD UNDER NO POWER SOURCE

PR-7820s hood can't be opened unless power switch is turned on.

If it is necessary for servicing, you can open it without power supply through the following method shown below.

Put a screwdriver (less than 3, minus) into the slot under the front panel.

Then, move the interlock linkage to the left until hood lock to be unlocked.

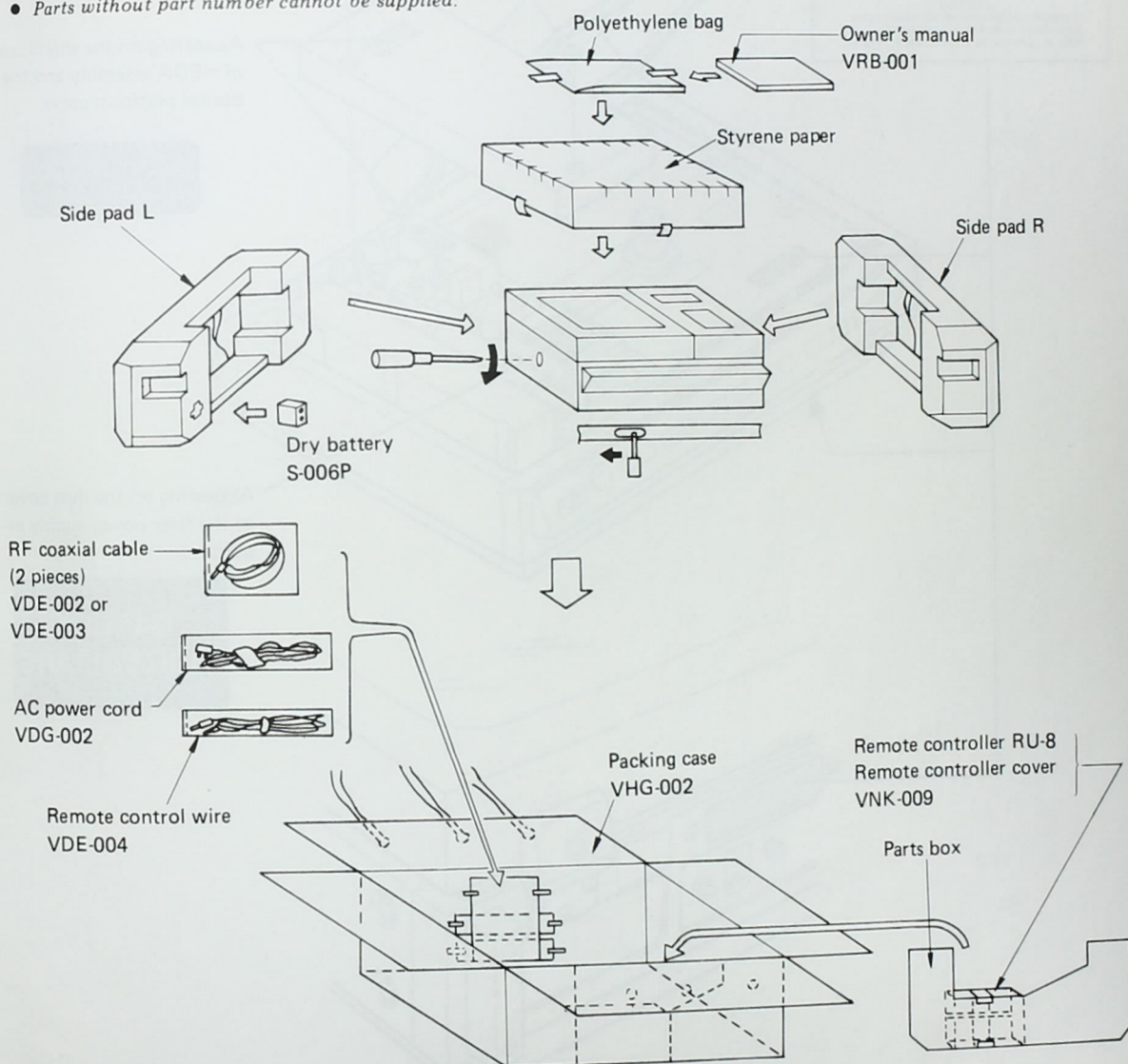


8. PACKING

1. Referring to page 118, move the interlock linkage and open the hood.
2. Holding the spindle motor (disc clamber) with one hand, turn the carriage stopper clockwise with a minus screwdriver (about 9 turns), and clamp the spindle motor.

NOTES:

- Take care not to injure around the hole when clamping the spindle motor.
- Don't turn on the power with the spindle motor clamped, or the carriage motor will be damaged. It causes the trouble of the mechanism for the carriage motor when moving the player without clamping.
- Parts without part number cannot be supplied.



9. IMPORTANT NOTICE

This unit is designed to permit service without the necessity of direct laser beam exposure. The service technician should exercise the precaution necessary to avoid any direct laser beam.

Before returning this product to the customer

make sure all shields, barriers, and covers are in place and the interlock system of the hood is functioning properly. Attaching place of caution labels is based on Federal Law (HEW regulation).

Appearing on the external surface of the rear panel, the mech panel and the bottom cover.

CAUTION
TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER.
THERE ARE NO USER-SERVICEABLE PARTS INSIDE.
REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

Appearing on the shield cover of HEDA assembly and the optical platform cover.

DANGER
LASER RADIATION WHEN OPEN
AVOID DIRECT EXPOSURE TO BEAM
CAUTION
HAZARDOUS ELECTROMAGNETIC
RADIATION WHEN OPEN

Appearing on the dust cover of the laser power supply assembly.

DANGER
HIGH VOLTAGE

